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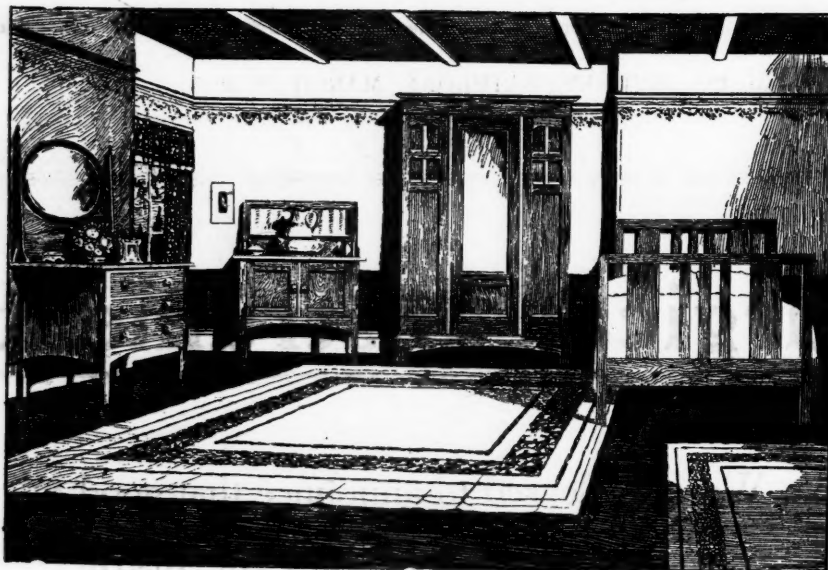
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No. 12.

ACUTE PELVIC INFLAMMATION.¹

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When Dr. Lilian Cooper, the Honorary Secretary of our Section, did me the honour to request that I should read a paper on acute pelvic inflammation before the Gynaecological Section of this Congress, I lightly consented, but found upon warming up to my subject that the time was all too short to carry out my original intention of a thorough statistical and clinical investigation of all the material available in Sydney. I have therefore been compelled to confine myself to a careful study of the last thousand cases of pelvic inflammation and puerperal sepsis which have passed through the gynaecological wards of the Royal Prince Alfred Hospital during the last decade. In slightly more than one quarter of these cases I have performed the operation and carried out the treatment.

A.—Terminology.

Acute pelvic inflammation is the term commonly applied to inflammation outside the uterus. The inflammation may be located in the Fallopian tubes (salpingitis), or it may be in the ovary (oöphoritis), or in the peritoneum (pelvic peritonitis), or again, it may be in the connective tissue, where it constitutes pelvic cellulitis. Two or three of these lesions are often associated and in many cases so intimately that it is difficult to determine which is the more important lesion. Therefore, for practical purposes, it is usual to consider all these lesions under the one comprehensive term: acute pelvic inflammation. The term might even have a wider application and take in puerperal inflammatory conditions within the uterus associated with infective lymphangitis and phlebitis of the pelvis. In many such cases the infective condition remains confined to the uterine veins and lymphatics and jumps so rapidly into the general system that the surrounding connective tissue, peritoneum, tubes and ovaries have little or no time to react before the development of general puerperal septicaemia. On the other hand, in very many of these puerperal cases the brunt of the infection is borne by the uterine appendages, peritoneum and connective tissue. Or again, both types of puerperal sepsis may develop *pari passu*. The term has been given its widest application in the present paper, which is based on a study of (a) 500 cases of acute and sub-acute infective salpingitis, (b) 400 of pyosalpingitis, (c) 50 of pelvic cellulitis and abscess, (d) 50 of puerperal sepsis, as found in the records of the Royal Prince Alfred Hospital for the years 1910-1919 inclusive.

B.—Ætiology.

The cause of acute pelvic inflammation is in every instance infection, whether from the pus-forming organisms, the streptococcus and the staphylococcus, the *Bacillus coli communis*, the *Bacillus lactis aerogenes*,

the pneumococcus, the *Spirochæta pallida* or the more ubiquitous gonococcus. As a practical basis for classification of causation, it might be asserted that nearly every case of primary acute pelvic inflammation in the adult can be traced to infection from (1) gonorrhœa, (2) septic abortion, (3) infected labour. This also represents the order of their importance as causes of acute pelvic inflammation, but the reverse is the case when their mortality is considered. Out of the 1,000 under review (a) of 696 patients with gonorrhœa, 11 died, *i.e.*, 1.5%; (b) of 185 patients with pelvic inflammation following abortion, 15 died, *i.e.*, 8%; (c) of 87 patients with sepsis following confinement, 26 died, *i.e.*, about 30%. Tables to show the more detailed analysis of the ætiology, together with the mortality of this disease, are attached.

Mode of Entrance and Spread of Infection.

Under ætiology it will be well to consider the mode of entrance and spread of infection, as well as to append a brief survey of the lesions caused. In the series under review, inflammation, when due to the gonococcus, nearly always extended by way of the uterine mucosa to the Fallopian tubes and through them to the ovary and peritoneum, with a bilateral distribution. Only in five cases out of 696 was there evidence of the gonococcus gaining entrance by way of the cellular tissue or secondarily affecting it to any extent and in these the possibility of mixed infection was not excluded. Whereas in septic abortion due to pyogenic organisms, principally the streptococcus and staphylococcus, the inflammation extended more often by way of the lymphatics directly through the wall of the uterus to the connective tissue round the uterus, as well as to the ovary and tube, which in some cases were attacked secondarily and in others *pari passu* with the cellular tissue. Moreover, the inflammation is usually unilateral, affecting, no doubt, the side on which the young ovum became implanted. Those cases of septic abortion in which the brunt of the infection seemed to be borne by both tubes and ovaries, with little cellular infection, were apparently due to one of two reasons: (1) gonorrhœa existing synchronously with pregnancy, since the organism of this disease prefers surface travelling; (2) the ovum having a fundal implantation, a situation where there is little connective tissue between the endometrium and uterine muscle on the one hand and the peritoneal covering of the fundus on the other, with the additional factor that the fundal implantation might be as near one tubal ostium as the other and the infection has two doors of exit equally close at hand. In cases of low implantation on the anterior or posterior walls, the side affected is that on which the placental site is placed; the cellular tissue is more often affected, as it is only at the sides of the uterus that the connective tissue exists to any great extent. This and the fact that it is usually nearer one ostium than the other yield an anatomical explanation of the prevalence of unilateral lesions in septic abortion cases, as compared with gonorrhœa cases.

¹ Read before the Gynaecological Section of the Australasian Medical Congress, Brisbane, 1920.

Avenue of Entrance by Puerperal Thrombosed Sinuses.

Another avenue of entrance is through the thrombosed sinuses of the puerperal uterus. Infection of these sinuses leads to infective thrombosis of the pampiniform veins of the broad ligament, resulting in broad ligament abscess or pyæmia or both. Often when the infection is *per medium* of the veins, septicæmia or pyæmia seems to develop and the organisms can be found on blood culture with little or no intervening cellulitis or peritonitis; these cases are usually fatal. In this series 29 deaths out of the 38 following septic abortions and confinements were due to septicæmia or pyæmia with little or no intervening cellulitis or peritonitis. When the latter exist the patient's immunity seems to have time to develop and she has a fighting chance if efficient treatment, such as drainage, etc., is carried out. The infecting organisms play an important part; the streptococcus and to a less degree the staphylococcus prove the most deadly and make little fuss as they silently pass on their way to the general systemic system through the pelvic tissues, which have, as it were, been caught unprepared for defensive measures. More often, however, the infective thrombi in the uterine sinuses cause another protective thrombus to be formed on the proximal or defensive side and, if the infection extends, the protective thrombus is formed further out. This process often continues until the veins of the broad ligament become extensively thrombosed. If the infection extends through an upper placental site, it affects the ovarian veins in the upper part of the broad ligament and, if through a low implantation, the lower veins of the broad ligament become thrombosed. Nature often succeeds in limiting the process. An abscess may develop, which is usually opened easily *per vaginam* with good results, but if not, it extends centrally either along the ovarian veins towards the *vena cava*, giving rise to those large lateral swellings extending towards the kidney areas often seen in puerperal septic cases; or it may extend along the lower veins to the internal iliac, common iliac and finally the *vena cava*. Occasionally the thrombosis extends from the common iliac down the external iliac, giving rise to white leg; such cases occurred in this series. At any time during the process of thrombosis particles may become detached, giving rise to general pyæmia. I must apologize for drifting into pathology and not confining my attention entirely to ætiology, but as it has a great bearing on the operative or non-operative treatment of these cases, I beg your indulgence.

Less Frequent Primary Causes.

Less frequent primary causes of acute pelvic inflammation are instrumentation and tuberculosis, the former in criminal abortion. In the present series seven definite cases of perforation of the uterus followed by peritonitis are included, one surgical and six criminal. It would be hopeless to try to give with any certainty the number of septic abortions out of the 167 recorded due to criminal instrumentation. Moreover, it must be understood, in speaking of the septic abortions recorded in this series, that the thousands of incomplete abortions with more or less sapræmia are not included, as they are classified under a separate heading in our records. Again, the six

cases of acute pelvic tuberculosis which are included in this series do not represent all the pelvic tubercular conditions which are filed elsewhere.

Secondary Acute Pelvic Inflammation.

Comparatively few cases of acute pelvic inflammation are secondary and caused by a direct or indirect extension of inflammation from some adjacent organ, such as the appendix, the bowel or bladder. The appendix plays the most important rôle in this group of secondary acute pelvic inflammation and accounts for 12 out of the 38 cases appearing under the heading of other causes in the ætiological table appended. When due to a ruptured or leaking appendix, the pelvic organs are bilaterally affected and some of the most frightful and difficult operative cases originate from this cause. On the other hand, the inflamed appendix often becomes glued to the right tube and ovary and results in a tubo-ovarian appendical mass, when it is often only possible to discover the offending component organ by taking a very accurate history. All those cases of acute pelvic inflammation secondary to the appendix are by no means represented in the above group, for in our records they are stored under the original cause and time has not allowed of an investigation of the appendix cases.

Rare Causes (Primary and Secondary).

Amongst other rare causes of acute pelvic inflammation, primary and secondary, met with are: fungating malignant disease of the uterus, ovaries and peritoneum, strangulated polypus of the uterus, degenerating fibroids, twisted gangrenous ovarian cysts, suppurating hydatids, syphilitic osteomyelitis of the pelvic bone, perforation of stercoraceous ulcer of the rectum occluded by syphilitic stricture, tuberculosis of the acetabulum and septic hæmatoma following ectopic gestation, peri-rectal abscess, ruptured duodenal ulcer.

The order of importance of the infecting organisms in this series was: (1) gonococcus, (2) streptococcus, (3) staphylococcus, (4) *Bacillus coli communis*, (5) *Bacillus lactis aerogenes*, (6) tubercle bacillus, (7) pneumococcus, (8) *Spirochaeta pallida*.

Research Into Causative Organisms of Pyosalpinx.

Before leaving the ætiology, I would like to record the results of an investigation carried out in 1913 and after at the Royal Prince Alfred Hospital to determine the causative organisms in acute pyosalpinx. In 70 cases slides and cultures of blood agar were taken from the tubes immediately after operation. In 12 the gonococcus grew on culture and in 21 it was found on slides. A dozen slides were taken from each case. Many times after a wearisome search the film was about to be recorded as sterile, when a cell was found packed to its limits with gonococci. The streptococcus, the staphylococcus and the pneumococcus were found once in film preparations.

C.—Treatment.

The treatment of acute pelvic conditions is a very vexed question and almost as much storm now rages about this subject as did about the treatment of appendicitis in former times. Many different opinions are expressed from the most conservative to

the most radical, each partisan claiming the best possible results. The fact is that they are probably both right in selected cases, but these contradictory views make it difficult for those who lack much general hospital experience to extract from the abundant literature on the subject any definite or stabilized principles to rely upon in the treatment of this prevalent and serious complaint of women. In the following remarks an endeavour will be made to outline the facts of treatment as shown by the records of the Royal Prince Alfred Hospital during the past ten years and to express certain definite conclusions which the writer's position as an honorary officer has allowed him to arrive at. A treatment schedule has

been made out under four headings: (a) acute and sub-acute infective salpingitis, oöphoritis and peritonitis; (b) pyo-salpingitis and perimetritis; (c) pelvic cellulitis, parametritis and abscess; (d) puerperal septicæmia and pyæmia. The pathological lesions resulting from the same causative factor are closely allied and the grouping in many instances is artificial, representing the same infection seen at different stages of its development. Roughly the groups (d) and (c) can be taken together, as they mainly represent puerperal infections, 11 cases only out of the 100 contained in it being due to non-puerperal conditions, such as appendicitis, syphilitic osteomyelitis, tuberculosis of the ileum and a few mixed gonor-

TREATMENT (ROYAL PRINCE ALFRED HOSPITAL, TEN YEARS).

Sterilizing Operations.			Non-Sterilizing Operations.			Non-Operative Treatment.			Deaths After Operations.	
Type of Operation.	Non-Puerperal.	Puerperal.	Type of Operation.	Non-Puerperal.	Puerperal.	Form of Treatment.	Non-Puerperal.	Puerperal.		
Hysterectomy.	32	9	S.O.	27	21	Ref. Op.	57	1	Under Anaesthetic . .	2
D.S.O.	106	8	V.	8	7	R.W. Op.	6	—	After Section—	
D.S. & O. . . .	86	10	Ab.	1	3	Deaths Op. . . .	1	3	(a) Gonorrhœal . . .	7
D.S.	12	2	Other Ops. . . .	—	—				(b) Appendix	1
									(c) Puerperal	2
									Drainage	4
									Curette	1
Total	236	29	Total	36	31	Total	64	4	Total	17
Hysterectomy.	16	2	S.O.	57	22	Ref. Op.	50	5	After Section—	
D.S.O.	82	22	V.	2	1	R.W. Op.	41	33	(a) Tuberculosis . .	1
D.S. & O. . . .	86	23	Ab.	—	—	Deaths Op. . . .	—	—	(b) Perforation . .	1
D.S.	32	3	Other Ops. . . .	16	7				Vaginal Drainage . .	2
Total	216	50	Total	75	30	Total	91	38	Total	4
Hysterectomy.	—	—	S.O.	1	2	Ref. Op.	—	—	After Section—	
D.S.O.	—	—	V.	3	14	R.W. Op.	3	17	(a) Perforation . .	1
D.S. & O. . . .	—	—	Ab.	3	5	Deaths Op. . . .	1	1	Vaginal Drainage . .	1
Total	—	—	Total	7	21	Total	4	18	Total	2
			V.	—	2	R.W. Op.		21	After Section—	
						Deaths Op. . . .		29	Vaginal Drainage . .	2
Total	—	—	Total	—	2	Total		50	Total	2

D.S.O. = Double Salpingo-Oophorectomy.
D.S. = Double Salpingectomy.

D.S. & O. = Double Salpingectomy and Single Oophorectomy.
Ab. = Abdominal Drainage.

S.O. = Single Salpingo-Oophorectomy.
V. = Vaginal Drainage.

R.W. Op. = Relieved without Operation.

ÆTIOLOGY (ROYAL PRINCE ALFRED HOSPITAL, TEN YEARS).

Disease.	Gonorrhœa.	Septic Abortion.	Infected Confinement.	Instrumentation (Perforation).	Other Causes.
500 Acute and Sub-Acute Infective Salpingitis, Oöphoritis and Pelvic Peritonitis	365	94	24	1	16
400 Pyosalpingitis and Pelvic Peritonitis	326	55	9	—	10
50 Pelvic Cellulitis and Abscess	5	18	15	6	6
50 Puerperal Septicæmia and Pyæmia	—	11	39	—	—
1,000 Total	696	178	87	7	32

rhœal infections. On the other hand, groups (a) and (b) are mainly gonorrhœa and a comparatively few, 26 in all, non-puerperal cases owe their origin to other causes; only 183 out of the 900 cases arise from puerperal infection. Many of these are cases of abortion or confinement complicated with gonorrhœa. That is to say, we may regard (a) and (b) as gonorrhœa, (c) and (d) as puerperal infection. I have further divided this table into operative and non-operative sub-groups and have still further divided the operative group into sterilizing and non-sterilizing operations, giving the type of each operation performed.

Treatment may be conveniently discussed under three headings: (1) prophylactic, (2) non-operative or medical, (3) operative. The treatment adopted in the puerperal groups (d) and (c) will be considered first.

(1) *The Treatment of Acute Pelvic Inflammation of Puerperal Origin.*

(a) *Prophylactic.*—The preventive treatment of puerperal sepsis lies entirely within the obstetric field and depends on the midwife, whether doctor or nurse. It merely means surgical cleanliness in the conduction of labour. This is all that can be said, no matter in what form it is put. For the most part it is entirely in the hands of the general practitioner and he who attends to the general health of his patient and sees that any infective conditions of the lower genitals are cured before labour and then conducts the delivery in an aseptic manner with a minimum number of examinations amidst clean and hygienic surroundings, immediately attending to any complications, such as lacerations of the cervix or perineum, will meet with very little puerperal sepsis.

(b) *Non-Operative Treatment.*—The puerperal septicæmic and pyæmic patients who are admitted to general hospitals, are usually very ill and often die. Out of the 50 patients whose cases are recorded in this series, 29 died, 19 after confinements and 10 after septic abortion. Many have had previous meddlesome curettage and intra-uterine douching. The routine treatment adopted was usually a thorough vaginal examination under good conditions in the theatre if possible and occasionally under anaesthesia to determine whether the uterus was empty and to ascertain the condition of the pelvic veins and surrounding tissues. Any palpable contents of the uterus were removed with the finger and rarely was curetting done except in the abortion cases. Only once was the uterus curetted after full-time pregnancy in the present series. The intra-uterine douche was used once or twice, but lately this instrument has been entirely abandoned, as curettage and intra-uterine manipulation only break down the natural barriers against the invading organism; any damage that is to be done by the uterine contents has been already done. Surgery, sera and specifics seem to have been of little or no benefit in these severe cases. The present treatment seems to have resolved itself into "conservative neglect" after the first thorough examination and depends mainly on fresh air, stimulants, suitable diet, good nursing, salt solution by the rectum and the Fowler position. Frequent examination under aseptic conditions are made in

order to discover the development of abscess formation in the surrounding pelvic tissues.

(c) *Operative Treatment.*—When the infection is less acute and time has been given the surrounding pelvic cellular tissue to react with more or less involvement of the other pelvic tissues and organs, the outlook is much more favourable and the domain of what might be termed minor pelvic surgery is reached. The operative procedures consisted chiefly of drainage *per vaginam* and abdominally. Parametritic abscesses were opened as far as possible extra-peritoneally through the vagina or groin. A few laparotomies were performed for exploration purposes, for perforated uteri or for secondary pelvic cellulitic conditions due to the appendix, etc. In none of these cases of the (c) group were sterilizing operations done. Opening of the abdominal cavity *per vaginam* was performed 17 times. It might be added that this class of case gives this operation its proper place and sphere of utility; with few exceptions the vaginal operation should be entirely reserved for pelvic abscesses of puerperal origin. In eight cases abdominal drainage was carried out, most often through the groin or just above Poupart's ligament. Finally many of these cases resolve without any operative treatment—20 out of the 50 in this group. Only four patients died, two were moribund and were not operated upon, one was operated upon through the vagina and one had a laparotomy for perforation. All had general peritonitis.

(2) *The Treatment of Acute and Sub-Acute Pelvic Inflammation Due Mainly to Gonorrhœa.*

(a) *Prophylactic Treatment.*—The fact that nearly every case of salpingitis and pelvic inflammation is due to a previous infective endometritis makes it important to check endometritis at once, whenever present and to take measures to prevent its development on every possible occasion. In the main it means the efficient treatment of gonorrhœa in its early stages. This is not the place to go into the treatment of gonorrhœa in the female, but the opinion is expressed that much less salpingitis would be found if patients were put to bed in the early stages of the disease or at the very least made to rest in bed a few days before and until a few days after each period during the attack. Also strict continence on the part of the patient during treatment is a fact usually overlooked. Before leaving this section of treatment, I would like to add my voice to the many others who condemn in the strongest language the indiscriminate use of the curette in the supposed cure of leucorrhœal discharges. The majority of these patients are sufferers from chronic endocervicitis of a gonorrhœal nature and the surgical interference merely lights up the disease and extends it to the Fallopian tubes. I do not wish to condemn altogether curettage of the uterus as the final stage of the cure in gonorrhœal endocervicitis and endometritis, but I think certain precautions should be taken. First, a sufficient time should elapse after the onset of the disease, three to six months. Secondly, repeated slides should be taken from the cervix with negative results for gonococci. Thirdly, the result of the complement deviation test should be negative. This latter test, I am of opinion, will in the near future take great prominence in the diagnosis of cure of gonorrhœa in the female,

(b) *Non-Operative Treatment.*—All authorities agree that there are a certain number of cases coming under the group (a) of acute salpingitis, oöphoritis, etc., which are cured by simple medical treatment as regards rest, diet, regulation of bowels and local sedative treatment. Especially is this the case where their cause can be traced to a puerperal origin. In groups (a) and (b) about 40 patients out of 140 suffering from sepsis of puerperal origin were relieved without operation. In some cases, of course, the diagnosis might have been incorrect, such as acute cystitis, etc.. However, it seems to have been the general practice to use conservative measures in patients suffering from a first attack, except in certain gonorrhœal cases, which will be discussed under the heading of operative treatment.

(c) *Operative Treatment.*—The vast majority of patients included under the headings (a) and (b) are operated upon immediately or after more or less conservative preparatory treatment. Of the gonorrhœa patients 703 were operated upon, 531 undergoing sterilizing operations and 172 non-sterilizing procedures and of the latter 19 were drained abdominally *per vaginam*. Taking non-sterilizing procedures first, many were done for inflammation of puerperal origin where the brunt of the infection was borne by one side, for the reasons explained under ætiology the other tube and ovary being more or less normal. Personally I always leave the opposite tube in these cases of puerperal or secondary origin (appendix, etc.), when the fimbriated end is open and pus is unable to be squeezed out. Recovery is usually uninterrupted and secondary operations unnecessary. In gonorrhœal cases if the opposite tube shows any sign of inflammation at all, it should always be removed, as it is almost certain to give trouble later and often leads to a stormy convalescence. In this group of non-sterilizing operations occur the greatest number of re-operations. In the present series 19 which are included under this heading, had had the other tube removed previously. In gonorrhœal cases they are to be condemned generally on account of the risk of re-operation, the occasionally stormy convalescence, the loss of economic value of the patient to the community and the risk of ectopic gestation. This latter complaint is now almost as prevalent as pyosalpinx (300 to 400 hospital cases in 10 years). The majority of these are due to a previous infective salpingitis, which destroys the cilia and forms pockets of mucous folds of the tubal lining, as well as rendering the tube, as it were, muscle bound. The advantages of leaving a damaged gonorrhœal tube are doubtful, as this condition is always followed by long periods of sterility, protracted convalescence, more or less constant pain, leucorrhœa, disinclination to work and to occupy their proper place in the household. The chance of the patients becoming pregnant is very small and is not such as to counterbalance the many disadvantages of conserving the other tube. In this I speak of purely gonorrhœal infections.

Another non-sterilizing procedure, namely, *per vaginam* drainage, to my mind holds no place in these groups, except in very selected cases. The abdominal route should practically always be adopted; I have never yet regretted having done it. By it

the extent of the disease can be ascertained and the normal contents of the pelvis preserved. In these groups *per vaginam* opening of Douglas's pouch should never be done except where the patient is unfit to undergo a prolonged operation and where a large fluctuating mass points in Douglas's pouch. In these cases the mass should be opened vaginally and symptoms allowed to subside before undertaking the abdominal operation. Such a procedure to my mind is on a par with abdominal drainage for appendical abscesses. All surgeons now agree that the appendix should be removed later for fear of recurrence and I hold the same is true of gonorrhœal infections of the tubes, because even if the patients recover and do not again suffer from acute attacks, they become chronic subjects of pain, leucorrhœa and dysmenorrhœal discomfort and, as I said before, are reputed to become pregnant more often than they do. All the writings of men who have studied a large number of the after results of conservative operations on gonorrhœal tubes, agree that the number of pregnancies occurring are negligible. Probably those that become pregnant, owe the result to the fact that the causative factor was puerperal, for with infections of the ordinary pyogenic organisms the fimbriated ends of the tubes are less frequently occluded than is the case with gonorrhœal infection. The chief conservative aim in gonorrhœal infections should be concerned with the ovaries and I venture to state that if there were less procrastination in these cases, both ovaries would be preserved more often than is the case at present. In the present series out of 531 sterilizing operations both ovaries were preserved in only 49 cases and one ovary in 205. I maintain that if operations were earlier performed, both ovaries would have been conserved in a greater proportion of cases. If we consider the nature of spread of the infecting organism, the gonococcus, we can understand why delay means further ascent and destruction of ovarian tissue. To delay operation until the ovary is under a continual bath of pus and infection and to expect it to remain healthy seems to me like expecting a man under a cold shower on a winter's morning not to feel cold. By the observation of a large number of these cases I have been forced to the conclusion that once gonorrhœal salpingitis is definitely diagnosed and is not mistaken for acute cystitis or endometritis, etc., the surgeon should operate immediately. I would not say the same of these cases owning a puerperal origin and uncomplicated with gonorrhœa. The awful conditions of the pelvis in neglected cases of gonorrhœal salpingitis are known to you all. I wish it clearly understood that mild cases of salpingitis without pus formation can usually be watched with safety, but they should be watched and watched carefully. The first bead of pus spilt over the ovary should be the indication for immediate laparotomy. I am being forced into the opinion that operations in the febrile stage, such as, for instance, in leaking or ruptured pus tube, does not mitigate against recovery. The peritoneum can just as well deal with the infection after it is opened as before and as long as the intestines are well and carefully packed off and the peritoneum dried carefully during the operative procedure, recovery is uninterrupted and smooth. In

these cases I always make a practice of removing the appendix first before attending to the tubes, so as to avoid spreading infection by secondary manipulations. Saline solution must not be put into the abdominal cavity on any account. I have been speaking of cases with open fimbriae and direct ascending infection. When the damage has already been done with pus tubes and great destruction of ovarian tissue, plus surrounding peritonitis and exudate and acute symptoms arise as a result of small escapes of pus which immediately become more or less locked off, the patients can safely undergo a period of conservative treatment in hospital until the temperature sinks to normal each morning. This wait also allows the tissues to harden and allows the over-sewing of the peritoneum to be performed much more accurately. It has been the general practice of surgeons of our hospital to operate in acute cases of appendicitis immediately without waiting and the results are as favourable as any I have seen in the hospital reports of the world. I believe immediate operations in selected cases of acute gonorrhoeal salpingitis without waiting for the quiescent stage, which means risk of the ovarian destruction, or for the immunity to be raised, will be followed by just as few deaths from general peritonitis and will result in the saving of many ovaries.

Before concluding this section a few words might be said about pan-hysterectomy in young women suffering from gonorrhoeal salpingitis. The reason for this procedure is that the cervix which often keeps up the infective discharge, is done away with. I am of opinion that this procedure is far too radical and that it is much better to preserve the uterus and ovaries and depend on after treatment for the cure of the endometrium of the cervix. The majority of cases usually clear up or become non-infective after six months with douching and painting.

Drainage of the Abdomen.

In the early cases of this series drainage abdominally or *per vaginam* was frequent, but in the later cases it was largely given up, especially in the gonorrhoeal cases. My own conclusion is that drainage is unnecessary, except in the very acute and fulminating cases of gonorrhoeal origin, but that a wider field is open in puerperal cases and cases of secondary origin, such as those following a ruptured appendix.

ON PNEUMOCOCCI IN PNEUMONIA IN SYDNEY.¹

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In 1883 Friedländer published his account of the organism now known as the pneumobacillus or the *Bacillus mucosus capsulatus* found by him in pneumonic lungs. Three years later, in 1886, Fraenkel and Weichselbaum published independently their description of the organism now known as the pneumococcus, found by them both in lobar and lobular pneumonia, and brought forward strong evidence of its aetiological relationship to these diseases. The importance of the pneumobacillus has since receded,

owing to its relative infrequency and it is not now believed to be present in more than 5% of all cases of pneumonia and is stated rarely to occur alone. Sisson and Thompson consider that Friedländer pneumonia is a disease of late adult life. It seems that while the pneumobacillus may be present with the pneumococcus in lobar pneumonia and may even be the only discoverable cause of a broncho-pneumonia, yet it is very doubtful if this bacillus produces an acute lobar pneumonia. Its rôle is probably no more primary in acute lobar pneumonia than is the streptococcus, the staphylococcus or the *Bacillus influenzae*. A striking confirmation of the aetiological rôle of the pneumococcus is the finding of F. S. Lister that in 100 positive lung punctures on the Rand the pneumococcus was the organism cultivated.

With the aetiological relationship of the pneumococcus firmly established in 1886, much attention was devoted to the study of immunity in this disease. Attention was particularly concentrated on the serum of patients during and after an attack and on the serum of man and animals after inoculations with pneumococcal antigens. Although opsonins (Wright), bacteriotropins (Neufeld) and agglutinins were demonstrated both in the serum at and after the crisis and in vaccinated animals and in addition both active and passive immunization were demonstrated in laboratory animals, still the results were disappointing, because of the apparent monovalency of the serum reactions. Sera containing opsonins or agglutinins for the homologous organism failed or gave unequal results with pneumococci from other sources. This period ended in 1913.

In 1913 a great light was thrown on these obscurities by two practically simultaneous reports, in America by Dochez and Gillespie and in South Africa by F. S. Lister. These workers put forward a biological classification of pneumococci which went far towards explaining the serological results obtained by them and by their predecessors in this field.

The former based their classifications mainly on agglutinations and protection experiments and the latter on the opsonic technique of Wright and on agglutination results. Lister in South Africa and Avery in America have since (1915-1916) elaborated the classification and F. S. Lister and the Rockefeller Institute workers have exchanged sera and cultures, with the result that certain "fixed types" of pneumococci have been found to occur in both these countries. Avery found that in addition to the typical Type II. there were members of this group whose antisera would not agglutinate the typical Type II., though they were themselves agglutinated by typical Type II. serum. These atypical Type II. strains were classified into three sub-groups, A, B and X, sera prepared from a member of A group or a member of B group agglutinating the other members of its group, whereas members of X group showed no cross agglutination.

It must be remembered that the American figures are from a white, civilized, relatively immune population, whilst the South African figures deal mainly with susceptible black races brought together into contact with white civilization for the first time. Lister's group A was most common in lobar pneu-

¹ Read before the Section of Pathology of the Australasian Medical Congress, Brisbane, 1920.

monia on the Rand in each of three successive years and is not a fixed type in America, but has been classified there as Type IV. It will be seen from Table I. that groups C, B and E in South Africa (Types I., I. and III. of America) show a lower incidence than in America, owing to the predominance of group A, although their relative frequency is much the same. Types I. and II. and Lister's C

TABLE I.—LOBAR PNEUMONIA.							
Dochez and Gillespie and Avery (America).		Lister (South Africa).					
Type	Incidence.	Mortality.		Group	Incidence		(3 years.)
Type I.	33	25%	=	Group C.	20%		
Type II.	29	32%	=	Group B.	11%		
Type III.	13	47%	=	Group E.	2%		
				Group A.	39%		
				Group D.	6%		
Type IV.	20	6%	=	Group F.	3%		
				Group G.	4%		
				Group X.	6%		
Type II., Sub- groups A, B and X.	5			Unclassifiable	4%		
100				100%			

Aver. mortal. = roughly, 25%

and B vary in incidence in both countries from year to year. Type III. and Lister's E have distinct cultural characters and had been previously described as the *Streptococcus mucosus*, although the majority, at any rate, of the organisms corresponding to this description are pneumococci and not streptococci. Lister's D, F, G, X and unclassifiable are probably members of Type IV., although, as Lister has identified several members of D, F, G and X (cases with relatively low case mortality), they are, strictly speaking, local "fixed types." I note that F, G and X groups were all identified in one year only (1915). Lister's "unclassifiable" group consists of members which show no cross agglutination. Lister has since identified three further groups, which he calls H, J and K groups (probably Type IV.).

With reference to the predominance of group A in South Africa, Dochez and Avery suggest that:

The most likely explanation of this phenomenon seems to be that in South Africa, among the whites, as in this country, there are a number of instances of pneumonia due to organisms resembling the sputum pneumococcus, the slightly virulent Group IV. of our classification. When such a pneumococcus is communicated to the susceptible black, its pathogenic history, in spite of its relatively low virulence, does not stop with the production of a single instance of pneumonia, as it seems to among individuals whose racial immunity is relatively high, but the organism is readily passed on to other susceptible blacks and thus establishes itself in the less immune race as a permanently pathogenic type.

It is possible that in South Africa the new races arising among the natives may, after a number of generations, gain sufficient virulence to become highly infectious for the relatively immune white.

Continuing the discussion of researches on the pneumococcus, more or less in chronological sequence, we find that during the years 1917-1919 attention has been turned from acute lobar pneumonia, particularly in America, to measles pneumonia and then to influenza pneumonia.

Before referring to these I would point out that in 1917 and 1918 two American Army Medical Officers, Joslin and Gage, found that of 14 pneumococci isolated in post-operative pneumonia, 7 belonged to Type IV., 3 to Type III. and 4 to Type II., and they refer to Whipple's finding, that 77% of pneumococci in post-operative pneumonia belonged to Type IV. (*Medical Clinics of North America*, Vol. 2, No. 2, September, 1918). This finding is significant and seems to me to indicate the rôle played by the pneumococcus in influenza and measles.

Considering the fact already established in America that the Type IV. pneumococcus is by far the most common type found in normal mouths and the generally accepted opinion that the pneumococcus is a secondary invader in both measles and influenzal pneumonia, it was not unexpected that the predominant type of pneumococcus in these diseases would be Type IV., the "sputum pneumococcus." It is interesting to note also that the Type III. pneumococcus, which is the next most frequent type in normal mouths, was also frequently found in influenzal pneumonia, whereas the other fixed types, namely Type I. and Type II., were very infrequent.

In Australia, without any knowledge of existing types in the pre-influenzal period, I have commenced the study of types found in influenzal pneumonia and it is therefore not surprising that precise conclusions as to the prevalence of "fixed types" are not forthcoming. It is interesting, however, to set side by side the results obtained by F. S. Lister and myself respectively, these results being published within a month of each other, in November and December, 1919. The comparison is made the more interesting because the number of cultures investigated was nearly the same (37 and 38 respectively) and the source of the cultures corresponded closely, the great majority having been isolated from the lung *post mortem*.

TABLE II.—INFLUENZAL PNEUMONIA.							
The Author's Cultures. (Total, 38.)		F. S. Lister's Cultures. (Total, 37.)					
Rockefeller Serum Used.		Lister's Serum.					
Type I.	1	=	0	Group C			
Type II.	0	=	1	Group B			
Subgroups II.	?	=	9	Subgroups B			
Type III.	8	=	10	Group E			
				Group A = 0			
				Group D = 1			
				Group F = 3			
				Group G = 2			
				Group H = 1			
				Group J = 1			
				Group K = 2			
				Unclassifiable = 7			
Type IV.	19	=	17	Type IV., according to American classification.			
Doubtful Agglutination by Type I. and II. Sera.	10						
	38		37				

It will be seen from this table that if my cultures labelled "doubtful" had belonged to sub-groups II. of the American classification, the prevalence of the different type in influenzal pneumonia in Sydney and on the Rand would have been almost identical. This group of 10 cultures that I have tabled as "doubtful," was put into one group in my report because the

members showed a partial agglutination with both Type I. and II. sera (Rockefeller) and concerning this group I made the following statement: "The group giving agglutination with both Type I. and Type II. sera are puzzling. It is not a ++++ agglutination. The emulsion is often clear, but the agglutinated bacteria are rather easily shaken up into clumps of varying size. The Type II. serum generally gives larger granules in this group than does Type I. I show this table with some diffidence."

I am aware now that using agglutinating sera for economical reasons in a commencing dilution of 1 in 20 (on adding the broth culture of pneumococcus the dilution was 1 in 40), I would probably have missed the Type II. sub-groups, so that there may have been Type II. sub-groups in my Type IV. group. Although the comparison between Lister's and my results, as shown in this table, is striking, I admit that it may be a mere coincidence as regards these groups. The frequent presence of Type III. and the rarity of Type I. and Type II. cannot, I think, be questioned.

I subcultured my pneumococci from cases of influenza pneumonia for some time whilst I produced

agglutinating sera from three of them. Twenty-six pneumococci, practically all from different fatal cases of influenzal pneumonia, were then put up against these three agglutinating sera. The results were disappointing as regards the finding of any explicable cross agglutination.

Almost three months ago a few patients with pneumonia began to be admitted to hospitals in Sydney, but, unfortunately, it was associated or coincided with a recurrence of a certain amount of influenza, for the most part of a mild type. I realized, therefore, that some cases of pneumonia would probably be influenzal, others acute lobar pneumonia. Unfortunately the number of available cases for investigation has been small and, although my material comes from four different public hospitals, I was only able to secure specimens from 23 cases, of which 20 were satisfactory for cultural purposes.

The sputum was plated out on plasma agar plates, the predominant organism noted and pneumococci, if present, were isolated and examined. No special search was made for influenza bacilli. The results are shown in Table III. Some of the cases were broncho-pneumonic in type from the clinician's point

TABLE III.

Case.	Source of Culture.	Type of Case.	Organisms Predominant.	Bile Solubility.	Inulin Fermentation.	Agglutination.	Mortality.
1. E.	Sputum	Lobar pneumonia	Pneumococcus	+	+	Type I.	Recovered
2. McD.	Sputum	Sudden onset; consolidation of right base; temperature fell by crisis	Pneumococcus	+	+	Type I.	Recovered
3. H.	Sputum	Consolidation of entire right lung and lower lobe of left lung	<i>Pneumococcus mucosus</i>	+	+	Type III.	Died
4. M.	Sputum	Consolidation of right lower lobe	<i>Pneumococcus mucosus</i>	+	+	Type III.	Recovered
5. H.	Pus from empyema	Pneumonia (sic) six weeks before	<i>Pneumococcus mucosus</i>	+	+	Type III.	Recovered
6. C.	Sputum	Lobar pneumonia	Pneumococcus	+	+	Type IV.	Recovered
7. W.	Sputum	Signs of pleurisy and bronchitic signs in both lungs	Pneumococcus	+	+	Type IV.	Recovered
8. N.	Sputum	Sudden onset; consolidation of right base; remittent temperature followed for three weeks	Pneumococcus	+	+	Type IV.	Recovered
9. S.	Sputum	Ill three weeks before admission; fine crepitation at one base and friction rub later	Pneumococcus	+	+	Type IV.	Recovered
10. W.	Sputum	Began with cold for three weeks; later spat up blood and temperature fell by crisis	Pneumococcus	+	?	Type IV.	Recovered
11. N.	Sputum	Labelled (?) "pneumonia"	Pneumococcus	+	+	Type IV.	Recovered
12. L.	Pus from empyema	A child; ill six weeks at home; empyema found on admission	Pneumococcus	+	?	(?) Type IV.; slight agglutination by Type II. serum	Died
13. M.	Pus from empyema	A child with acute nephritis and empyema	Pneumococcus	+	+	Type IV.	Recovered
14. H.	Sputum	Broncho-pneumonia; ill for some weeks before with cough and much sputum; temperature fell by crisis	Pneumococcus	+	+	Type IV.	Recovered
15. W.	Sputum	Consolidation of left base	Pneumococcus	+	?	Type IV.	Recovered
16. J.	Sputum	Consolidation of left base	Pneumococcus	+	?	Type IV.	Recovered
17. McA.	Sputum	Signs of consolidation at left base; temperature fell by crisis	Streptococcus	—	—		Recovered
18. W.	Sputum	Post mortem, lungs resembled influenzal pneumonia	Streptococcus	—	—		Died
19. H.	Sputum	Broncho-pneumonia	Influenza bacillus				Recovered
20. B.	Sputum	Ill ten days before admission; consolidation of left base; temperature fell by lysis, taking one week to fall	Influenza bacillus predominant; also pneumococcus and streptococcus				Recovered

Summary of Pneumococcal Cases.—Type I., 2 cases; Type II., 0 cases; Type III., 3 cases; Type IV., 10 cases. Types II. and IV. are somewhat doubtful, because I have not been able to get Type II. serum working satisfactorily.

of view, others were typical lobar pneumonia, mostly of a mild type. Of 19 patients whose history was followed up to the 16th August, three died, but one of these suffered from a post-operative pneumonia and I could only isolate streptococci (*Streptococcus viridans*) from the lungs *post mortem*. Two other cases appeared to be influenzal and from another I isolated streptococci and not pneumococci. This leaves two patients out of 16 dying from a pneumococcal infection and one of these was a child with a pneumococcal empyema dying after operation. The other patient had a massive pneumonia, the whole of the right lung and the lower lobe of the left being consolidated. The latter was a Type III. pneumococcus infection and the former was provisionally classified as a Type IV. infection.

This gives a mortality from pneumococcal cases of 12½%. This is low compared with American statistics. The mortality in the Type III. cases (only 3) was 33⅓%.

With regard to the all important question of the immune sera used for differentiation I must state that my experiences have been somewhat perplexing. I have used the macroscopic method of agglutination and have not yet used "protection" experiments with mice. I find that the most rapid and complete agglutination is obtained by placing the mixture of serum dilution and broth culture in a mechanical shaker for one hour at room temperature (incubator temperature is not necessary). This method was found more rapid than at 37° C. or 55° C. without shaking.

In working with pneumococci from influenzal pneumonia, I used Rockefeller Institute sera. In that series I found only one Type I., the agglutination being complete and clear cut in a dilution of 1 in 40 and almost complete 1 in 80. I prepared agglutinating sera from this strain giving agglutination equal to the Rockefeller serum at the time and again after nine months storage in the ice chest, when I began work recently on lobar pneumonia. Having no more Rockefeller serum, I had imported Mulford agglutinating serum. This serum did not, however, agglutinate my original Type I. and only gave a partial agglutination with a second Type I. and no agglutination with a third Type I., both of which were completely agglutinated by my serum. These agglutinations began with a dilution of 1 in 5.

These agglutinations have been so complete and definite that I feel confident that these three cultures are members of an Australian "fixed type" and probably identical with Type I. of America. With Type II. serum, both Rockefeller and Mulford, I have had no definite and complete agglutinations, commencing for economical reasons with a dilution of 1 in 20 in the case of the former and 1 in 2.5 in the latter (1 in 40 and 1 in 5 respectively when the broth culture is added).

In order to pick out members of Type II. subgroups American workers use Type II. serum undiluted. I may have missed members of the subgroups. And again as the Mulford Type I. serum had apparently during importation lost agglutinating properties as compared with the Rockefeller

serum, the same may have happened to the Type II. serum. Both the Rockefeller and Mulford Type III. serum, however, agglutinated the pneumococci of the mucosus type isolated by me. The first eight members were agglutinated by Rockefeller serum and the last three by Mulford. The agglutination generally was marked down to a dilution of 1 in 4 (1 in 8 after addition of broth culture).

In conclusion, I must apologize for the incomplete results that I have to put before you in opening this discussion. I feel, however, that the difficulties have been partly due to the inopportune period when the investigation began. Never probably before in the history of Australia as during the last eighteen months have so many "casual" pneumococci been endowed with temporary virulence. The real "tradesmen" in lobar pneumonia will come into their own again.

I am of the opinion that the best method of investigation is to prepare our own agglutinating sera and to work out the groups by cross agglutination. Identity with overseas types can be compared afterwards. I may state that I will gladly exchange cultures and sera with other members working on this subject.

I must express my indebtedness to Professor Welsh, of the Sydney University, to Dr. Millard, Superintendent of the Coast Hospital, to Dr. Inglis, Pathologist at the Sydney Hospital, to Dr. Mona Ross, Chief Resident Pathologist at the Royal Prince Alfred Hospital, to Dr. Marjorie Ross, Pathologist at the Children's Hospital, and to Mr. E. Dawes, of the Pathological Department, Royal Prince Alfred Hospital.

Supplementary Note.

Dr. Patterson, Director of the Walter and Eliza Hall Institute of Research at the Melbourne Hospital, has kindly informed me that the agglutinating serum prepared by me from a Sydney strain identified as Type I. by Rockefeller serum, agglutinates four Type I. pneumococci isolated by him in Melbourne and does not agglutinate three of Type II. and three of Type III., his classification having been carried out by agglutination with Mulford serum.

Reports of Cases.

A SERIES OF CASES OF PRIMARY ANÆMIA IN CHILDREN.

By W. F. Litchfield, M.B.,

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Pernicious Anæmia.

CASE I.—N.Y., boy, aged 2 years and 3 months, was admitted to the Royal Alexandra Hospital for Children on October 9, 1908, was discharged on October 19, 1908, and died on October 29, 1908.

History.—The patient had always been a quiet, weakly child. He had not been well during the period preceding admission. He had not consulted a doctor.

Condition on Admission.—The patient was a rather thin boy with a smooth, but not full, face, showing a lemon-yellow anæmia. The spleen could be felt below the costal margin. The other organs appeared to be healthy. The temperature was normal and the pulse-rate ranged between 120 and 144 per minute. The respirations were 23 to 30 per minute. Before death some oedema of the lower limbs appeared. The blood count was as follows:

Red Cells.. . . .	1,100,000 per c.mm.
Hæmoglobin Value .. .	25%
White Cells .. .	1,200 per c.mm.
Colour Index.. . . .	1

Differential count (100 cells counted):

Polymorpho-nuclear Leucocytes	47%
Lymphocytes	49%
Myelocytes	4%

There were numerous nucleated red cells; of 76 counted, 40 were megaloblasts. Megalocytes and microcytes were also present.

Lymphatic Leuchæmia.

CASE II.—Baby girl, aged three months, was admitted to hospital during 1909 and died soon after.

The face and body were moderately plump. There were enlarged glands in the axillæ, the mammae were enlarged and nodular and the liver and spleen were enlarged.

A blood film only was examined. Of the white cells, 99% were lymphocytes, the majority being large lymphocytes, while the polymorpho-nuclear leucocytes and myelocytes represented only 1%. A few of the latter were seen. No notes were kept of the condition of the red corpuscles.

CASE III.—D.H., a boy, aged 5 years, was first seen on October 15, 1909. He died on November 18, 1909. He had been ill for one week, suffering from boils, malaise and bleeding from the mouth.

Condition on Admission.—His face was full and smooth, showing a slight lemon-yellow anæmia. The glands in the groin were moderately enlarged; there was one large gland under the left side of the lower jaw. The spleen was greatly enlarged; the liver was enlarged. Small purpuric spots were seen all over the body. Treatment by X-rays applied over the spleen and bones was carried out three times a week apparently without effect. A blood film only was examined. Of the white cells, 99% were large and small lymphocytes and 1% polymorpho-nuclear leucocytes. The red cells were nearly all normal in appearance. One normoblast was seen.

CASE IV.—A.C., a girl, aged 7½ years, was admitted to hospital on June 18, 1911, and died on July 17, 1911.

History.—The patient had been a healthy girl until a few days before she was brought to the hospital, when a croupy cough appeared.

Condition on Admission.—The child was somewhat thin. Her colour was good. Enlarged glands were felt in the episternal notch, apparently pressing on the trachea. There were also enlarged glands in the axillæ, in the groins and in the neck. The spleen was palpable beneath the ribs. A few days before death occurred the liver began to enlarge rapidly.

An examination of the blood revealed 150,000 white cells per cubic millimetre; the red cells were not counted. The differential count yielded the following result:

Lymphocytes	95%
Polymorpho-nuclear Cells	5%

One or two myelocytes were seen. There were a great number of irregular, shadowy, large lymphocytes. The red cells were of a good shape and colour. On July 7, 1911, the white cells numbered 600,000 per cubic millimetre; on July 15, 1911, they numbered 1,000,000. A *post mortem* examination was not made.

CASE V.—S.B., aged 2 years and 5 months, was admitted to hospital on February 15, 1916, and died on February 22, 1916.

History.—The child had been ill for three weeks with purpura, weakness and anæmia.

Condition on Admission.—The patient was well nourished. There was a lemon-yellow anæmia. Numerous purpuric splashes were visible. The spleen was greatly enlarged and the liver was also enlarged. There was no evident enlargement of the lymphatic glands. The spleen diminished in size rapidly before death. Blood appeared in the stools. The blood count on admission was as follows:

Red Cells.. . . .	2,025,000 per c.mm.
White Cells	57,400 per c.mm.
Mononuclear Cells .. .	97%
Polymorpho-nuclear Cells..	2%
Eosinophilic Cells .. .	1%

No nucleated red cells were seen. Of the mononuclear leucocytes, 75% were large cells of an indeterminate nature. Dr. Tidswell, Honorary Pathologist to the Hospital, thought that they might have been primitive myelocytes. I regarded them as large lymphocytes.

Lymphatic Leuchæmia or Lympho-Sarcoma.

CASE VI.—C.M., aged 10 years, was seen in consultation at Newcastle on August 1, 1914, and died on October 6, 1914.

History.—The child had been ill for one month. Its previous health had been good.

Condition on Admission.—The patient's state of nutrition was good. There was visible anæmia of the face. Scattered purpuric splashes were present. There was bleeding from the nose and mouth. The spleen was enlarged, the edge reaching to below the umbilicus. There were enlarged, discrete glands in the neck, axillæ and groins. The left pleural cavity was full to the apex of pure blood. Blood films only were examined. The white cells were below normal in number. The red cells were of good shape; there was some chromatophilia, many megalocytes and many megaloblasts. A number of the red cells, especially the large forms, showed distinct punctate basophilia. The differential count was as follows:

Lymphocytes	75%
Polymorpho-nuclear Cells	20%
Transitional and Other Cells.. . . .	5%

Some of the cells classed in the last group were Reider's cells. There were many large, crushed forms of lymphocytes. Small, medium-sized and large lymphocytes were present, the majority being the middle forms. The punctate basophilia of the red cells suggested lead poisoning. Dr. Marjorie Ross tells me that punctate basophilia of red cells is not uncommon in children, besides those suffering from lead poisoning. The blood in the pleural cavity suggested lympho-sarcoma. Reider's forms, of which there were a few in the films, occurs, according to Ehrlich, only in lymphatic leuchæmia or in lympho-sarcoma.

Lymphatic Leuchæmia.

CASE VII.—E.B., a boy, aged 4 years, was admitted on February 23, 1915, and died on February 28, 1915.

History.—The patient had been ill for three weeks. His previous health had been good.

Condition on Admission.—He was a well nourished boy, with a pale face and yellowish complexion. Purpuric spots and bruises were present on the face, body and limbs. The spleen could be felt with ease and the lower border of the liver extended 5 cm. below the costal margin. Enlarged discrete glands were felt in the axillæ and groins. The blood count was as follows:

Red Cells.. . . .	1,700,000 per c.mm.
White Cells	70,000 per c.mm.
Lymphocytes.. . . .	99.5%
Polymorpho-nuclear Cells..	0.5%

The lymphocytes were mostly small forms; no very large forms were seen. Only one normoblast was seen.

CASE VIII.—F.T., a boy, aged 4 years, was admitted on March 3, 1916, and died on April 28, 1914.

History.—The boy had been ill for a few days before admission. He was very irritable.

Condition on Admission.—He was very pale. There were scattered bruises about the body. The spleen was not enlarged and no enlarged glands were detected. The blood count was as follows:

Red Cells.. . . .	687,000 per c.mm.
White Cells	112,500 per c.mm.
Lymphocytes.. . . .	99%
Polymorpho-nuclear Cells..	1%

No nucleated red cells were seen. The lymphocytes were all very small forms.

CASE IX.—F.D., a girl, aged 9 years, was admitted on September 19, 1918, and died on October 31, 1918.

History.—She had been ill for one month with headache, malaise and anæmia. She had previously enjoyed good health.

Condition on Admission.—The patient was well nourished and happy in demeanour. Her face was pale. Minute purpuric spots were scattered over the surface of the body. The spleen was enlarged to the level of the umbilicus. Enlarged glands were detected in the groins and axillæ, some as large as a bean.

Course of the Disease.—The temperature curve followed an irregular course, ranging from normal to 39° and 39.5° C. throughout. The pallor increased and she became restless and distressed toward the end. The blood count was as follows:

Red Cells..	1,430,000 per c.mm.
White Cells ..	7,000 per c.mm.
Hæmoglobin Value ..	22%
Colour Index ..	0.8
Differential Count:	
Lymphocytes ..	95%
Neutrophile Cells..	2%
Eosinophile Cells ..	2.7%
Basophile Cells ..	0.3%

The red cells showed considerable variation in shape and depth of staining. A few normoblasts were seen.

Several other blood counts were made, but no material change was noted. The majority of the lymphocytes were immature forms, with large, open nuclei and scanty cytoplasm.

CASE X.—K.G., a boy, aged 6 months, was admitted on February 12, 1919, and died on March 4, 1919.

History.—He had been ill for two months with malaise and anæmia.

Condition on Admission.—His face was pale. The child was irritable and at times suffered pain in the back of the head. There were purpuric spots all over the body. The spleen was not enlarged, while the lymphatic glands were only slightly enlarged. The blood count revealed the following:

Red Cells..	1,260,000 per c.mm.
White Cells ..	5,200 per c.mm.
Hæmoglobin Value ..	18%
Colour Index ..	0.7%
Differential Count:	
Lymphocytes ..	94%
Neutrophile Cells ..	4%
Eosinophile Cells ..	2%

No nucleated red cells were seen. The red cells were irregular in size and the lymphocytes were all small. On February 26, 1919, the blood picture was the following:

Red Cells..	800,000 per c.mm.
White Cells ..	3,700 per c.mm.
Lymphocytes..	93%
Neutrophile Cells ..	5%
Eosinophile Cells..	2%

A few normoblasts were seen.

CASE XI.—J.M., a girl, aged 1 year and 11 months, was admitted to the Hospital on November 17, 1918, was discharged on December 13, 1918, was re-admitted on February 2, 1919, and died on February 15, 1919.

History.—The patient had suffered from anæmia and weakness for some days before admission. While she was in hospital diarrhoea developed. The diarrhoea diminished under treatment and she was treated for a time as an out-patient.

Condition on Admission.—The spleen and liver were enlarged; the glands in the axillæ were also enlarged. There were no hæmorrhages. The blood examination revealed the following condition:

Small Lymphocytes ..	52%
Large Lymphocytes ..	25%
Neutrophile Cells ..	20%
Basophile Cells ..	2%
Eosinophile Cells ..	1%

There was some irregularity in the size and shape of the red cells and also in the depth of staining.

On February 13, 1919, the spleen, liver and glands in the neck were enlarged. There were ecchymoses, proptosis and

bleeding from the mouth. The temperature was raised, while the pulse-rate and respirations were rapid. The blood count was as follows:

Red Cells..	2,190,000 per c.mm.
White Cells ..	102,200 per c.mm.
Colour Index ..	0.5
Differential Count:	
Large Lymphocytes ..	67.3%
Small Lymphocytes ..	31.0%
Neutrophile Cells..	1.5%
Eosinophile Cells ..	0.2%

There were no nucleated red cells, but the same irregularities as are mentioned above were noted.

CASE XII.—H.P., a boy, aged 1 year and 7 months, was admitted to hospital on December 26, 1919, and died on January 20, 1920.

History.—The parents noted a swelling of the child's belly a short time before admission.

Condition on Admission.—There was a moderate degree of pallor of the face. The spleen extended to below the level of the umbilicus. The liver was enlarged and glands of the size of small marbles were felt in the neck, axillæ and groins. There were scattered bruises over the body. The blood count was as follows:

Red Cells..	2,560,000 per c.mm.
Hæmoglobin ..	37%
Colour Index ..	0.7
White Cells ..	102,000 per c.mm.
Lymphocytes..	96.5%
Neutrophile Cells..	2.5%
Transitional Cells..	0.5%
Eosinophile Cells ..	0.5%

The red cells were irregular in size, shape and staining. Of 400 red cells counted, nine were normoblasts and one a megaloblast. During an examination carried out on January 5, 1920, 50 normoblasts and 15 megaloblasts were counted among 400 red cells.

Acute Myelogenous Leuchæmia.

CASE XIII.—A.M., a girl, aged 10 years, was admitted to the hospital on August 10, 1920, and discharged on August 26, 1920. The subsequent history of this patient has not been ascertained.

History.—Two months before admission the patient had tonsillitis. Since then she had not been well. She became pale shortly before admission and had suffered from pains in the back of the head. She had had attacks of vomiting.

Condition on Admission.—The patient was pale and thin. The spleen was not enlarged. There was no definite enlargement of the lymphatic glands and there were no hæmorrhages. There was an irregular fever. The blood count was as follows:

Red Cells..	1,250,000 per c.mm.
Hæmoglobin ..	20%
Colour Index ..	0.8
White Cells ..	200,000 per c.mm.
Neutrophile Cells ..	12%
Neutrophile Cells..	12%
Eosinophile Cells..	1%
Lymphocytes..	15%
Large Monocytes ..	1%
Neutrophile Myelocytes ..	3%
Eosinophile Myelocytes ..	1%
Myeloblasts ..	67%

A few nucleated red cells were seen.

Much consideration was given to this unusual film. A careful examination enabled us to differentiate with certainty the myeloblasts or pre-myelocytes from large lymphocytes, which they resemble in some respects.

General Remarks.

Primary anæmia in children is not a common disease. Secondary anæmias and splenic anæmias have been excluded from this series. In 1905, before the Australasian Medical Congress, in Adelaide, Dr. Macdonald Gill reported four cases of anæmia in children, comprising one case of chronic

myelogenous leuchæmia, one of lymphatic leuchæmia and one of *pseudo-leuchæmia infantum* and one of acute myelogenous leuchæmia. Taking the two series together, an idea of the relative frequency of the forms of leuchæmia should be formed. It will be noticed that no examples of mixed leuchæmia were seen. Although such cases have been reported, I am sceptical of their occurrence. I suspect that in the so-called mixed cases primitive myelocytes are mistaken for lymphocytes.

Case I. is interesting on account of the rarity of pernicious anæmia in children.

Case II. is noteworthy on account of the early age at which lymphatic leuchæmia occurred. Cases IX. and X. are interesting as examples of lymphatic leuchæmia, associated with leucopenia. Some authorities deny that such cases occur; but these seem to have been genuine instances.

In conclusion, I wish to thank Dr. F. Tidswell, Honorary Pathologist, and Dr. C. L. MacIntosh, Dr. Sinclair and Dr. Marjorie Ross, Resident Pathologists at the Royal Alexandra Hospital for Children, for their work in estimating and recording the blood pictures in my cases.

Reviews.

THE VALUE OF ANIMAL EXPERIMENTATION.

Walter G. Spencer has collected in book form three Hunterian Lectures given by him at the Royal College of Surgeons during 1920 under the title, "Animal Experiments and Surgery."¹ The book owes its origin to a series of letters written to *The Times* by Sir Charles Ballance and the author, with the object of countering the propaganda of the Anti-Vivisection Society and others and also to defeat the Bill laid before the House of Commons in 1918 to prevent experiments on dogs. The success of these letters led the author to amplify them; the result is the book.

The subject matter is dealt with in three sections: (1) An historical account of some of the animal experiments which have had a principal influence upon the development of surgery. (2) A description of experiments which directed the application of surgery to the organs of the body. (3) An explanation of how discoveries made by experiments have enabled the scope of surgery to be extended indefinitely.

As may be gathered from the objects of the book, the various subjects are not dealt with in scientific detail, but many interesting historical facts may be gleaned from a perusal of its pages. Several instances are quoted in which the significance of a discovery of an earlier investigator has been unappreciated or ignored, only to be "rediscovered" many years or generations later.

In the "Iliad" are described more than 150 wounds, two-thirds of which were fatal. It is remarkable that the account of the wounds is a natural one and within the bounds of possibility; a marked difference from the descriptions of wildly impossible injuries and illnesses so frequently met with in the pages of the modern novel.

Celsus recorded the removal of a stone from a horse's bladder through the rectum by the aid of a calculus hook; he also referred to the fact that cataracts in the eyes of horses caused by flicks of the whip—the eyes not being protected by blinkers—were couched by paracentesis.

Galen discovered that the recurrent laryngeal nerve activated the muscles of the larynx, but his idea was that the action of the nerve was like the cord of a bell running over a pulley. He exposed the heart of a young pig without opening either pleural cavity and was thus able to remove successful a necrosed sternum in a patient. His experiments on the spinal cord show wonderful skill and acumen. The reciprocal action of antagonistic muscles did not escape his critical observation.

As far back as 1665 Richard Lower, in the presence of Robert Boyle, successfully performed blood transfusion from one dog to another. After repetitions on animals, transfusion was tried on man, but failed. The blood of one dog is compatible with that of other dogs. The complex problems of incompatibility, hæmolysis and agglutination were

not made clear until after the work of Ehrlich, Bordet and others during the past thirty years. Moss and other experimenters have also shown that one cause of previous failures of blood transfusion in man was incompatibility between donor and recipient.

The author briefly reviews the animal experiments which have led to the development of the various branches of surgery, blood vessels, nervous system, ductless glands, abdomen, production of antisera for use in treatment. In each of the various subjects dealt with the author points out a period in which no progress was made; then, as a result of a series of experiments, an important advance took place. Even at the present time few will support the statement of Erichsen in 1874, which was repeated in his textbook, "The Science and Art of Surgery": "Surgery has attained its highest plane and reached its limit of usefulness and nothing in the way of improvement or advance need be looked for, except in details of technique."

The book is very readably written. Its object was achieved and the Bill was defeated.² Should similar action ever be required in this country, the book furnishes a long array of facts and powerful arguments for animal experimentation, which are presented in such a way as to be appreciated readily by the general public.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

At a meeting of the Senate of the University held March 7, 1921, the Chancellor, Sir William Cullen, made reference to the death of the late Honourable John Garland, M.A., K.C., M.L.C., and moved that the Senate places on record its expression of appreciation of the late Senator's services to the University and of its sympathy with his family.

A letter was received from the Perpetual Trustee Company, notifying the amount of the bequest for cancer research of the late J. F. Archibald—£6,230—and enclosing an allocation of the total investments.

On the recommendation of Professor Fairfax Reading, Dean of the Faculty of Dentistry, the Senate approved of a bronze medal being awarded at graduation, as in the case of other faculties.

A letter was received from Sir Kenneth Anderson on behalf of the Orient Company, stating that the Company had decided to limit by one half the offer of three first-class passages annually in favour of graduates of the University on account of the increasing cost of such passages, but stating that the Peninsular and Orient Company had decided to share with them in the future the full offer of three annual passages. It was resolved that the thanks of the Senate be transmitted to the Orient Company and to the Peninsular and Orient Company for their generosity in providing these passages.

The following appointment was made, *inter alia*: Lecturer on Water Supply and Sewerage, Mr. G. B. Carlton, B.E.

It was decided to advertise in Australasia and Great Britain for the position of Lecturer in Veterinary Surgery and Anatomy at a salary of £500 per annum with annual increments of £40 to £700.

The degree of Master of Surgery was conferred *in absentia* upon Messrs. L. L. Holland, M.B., and E. B. M. Vance, M.B.

THE UNIVERSITY OF MELBOURNE.

The Council of the University of Melbourne has received with much regret a notification from Sir Henry Maudsley resigning his position as Stewart Lecturer in Medicine. It is announced that the resignation will take effect on August 31, 1921.

Dr. F. Middleton has tendered his resignation to the Council of the University of Melbourne as Lecturer on Anatomy in the Medical School.

At a meeting of the Federal Executive Council held on March 10, 1921, the Honourable W. Massy Greene, Minister for Trade and Customs, was sworn in as Minister for Health.

¹ Animal Experiments and Surgery: Hunterian Lectures. Delivered at the Royal College of Surgeons of England on February 13, 16 and 18, 1920, by Walter G. Spencer, M.S., F.R.C.S.; 1920. London: University of London Press, Ltd.; Crown 8vo, pp. 179.

The Medical Journal of Australia.

SATURDAY, MARCH 19, 1921.

The Medical School in Adelaide.

The Medical School of the University of Adelaide was founded in 1884, nearly thirty-seven years ago. It has played a great part in medical education in the Commonwealth, but like many other institutions in a young country, it has outgrown its clothing. The late Sir Edward Stirling equipped the physiological laboratory when the school was still in its infancy with apparatus then regarded as efficient and adequate. To-day the physiological laboratory is a bare department, with anything but adequate and efficient equipment. Professor Watson was asked to establish the department of anatomy in a few rooms and with the genius of adaptive invention, he moulded his requirements to fit into the limits of what seems to-day to be a singularly cramped space. No doubt the physiological and anatomical departments were sufficient and adequate in 1886. Time brings with it changes which cannot be ignored. For a series of years one order of staging is suitable for the performance. The actors soon find that the theme of the play is apt to become extended, that the audience demands more elaborate setting and more complex properties. After a time a complete rebuilding of the proscenium, stage and auditorium is demanded, unless, perchance, the managers have been adding, patching, extending and altering piecemeal at short intervals. In this case the inevitable reconstruction is postponed for a brief span.

The people of Adelaide have apparently not yet realized that the Medical School has served its time and is no longer suitable for efficient teaching. The Department of Physiology consists of one laboratory of moderate dimensions and a small study for the Professor. There is so little accommodation that the histology work has been suspended, as it were, between heaven and earth. It is still attached to the Physiological Department, but is housed in relatively cramped surroundings in the vicinity of the anatomical rooms. The Department of Anatomy is scarcely

more than a dissecting room. There is no room for modern research work, none for advanced teaching in embryology, histology and morphology. The people of Adelaide should be told that the quarters in which the fundamental sciences of medicine are being taught, are ridiculously inadequate and that unless the defect is remedied by the erection of a new medical school, they may look in vain for highly educated practitioners among the graduates of the next few years. It cannot be questioned that efficiency in the training of medical students is an almost priceless asset to any community. The people of Adelaide may not be able to hold the new occupants of the three chairs unless a suitable environment is provided for them. There are various proposals in the air concerning the reconstruction of the medical school. All these plans suffer from the same defect. They are makeshifts, presented because of the small amount of money available. When building is started, consideration should be had to the possibility of expansion. If the site adjoining the Adelaide Hospital is not extensive enough, the sacrifice should be made and the school divorced for a time from the clinical teaching. The number of students will increase. Each student needs more room than he did twenty-seven years ago and he will need much more room in the near future. It is anticipated that the systematic lecture will disappear, to a large extent at all events, in favour of teaching by demonstration, by practical work and by experiment. Small classes are more productive of good results than large ones. The modern tendency involves a quadrupling of the accommodation. The rich citizens of the beautiful city of Adelaide and the Government of South Australia must provide the means to erect an edifice fitted to be the house of medical studies.

While the outer walls of the present School of Medicine have become too narrow to hold their legitimate contents, the interior of the two older Departments calls for even greater development. Within recent times three new professors have been appointed. They are all young, energetic and competent. They have the ability and the desire to provide for the Adelaide students as good a training as can be obtained anywhere. The professor of Anatomy, Professor Wood Jones, presides over a department without a library, without a microscope, without a balance

or even a pair of scales for weighing an organ, without a beaker, without a test tube and without any of the modern instruments of precision necessary for original investigation or advanced teaching. A small grant has been sanctioned for the purchase of a few of the more essential things. The sum is inadequate even for modest requirements. We have suffered in all our Australian Universities in the past on account of the parsimony on the Senates or Councils. In the matter of current journals, it has been necessary for the professors to purchase their own sets. As a consequence no departmental libraries have been gathered within the medical schools. The need for such special libraries is obvious. Similarly it may be said that it is unreasonable to engage the services of an eminent teacher and a recognized research scholar and to ask him to teach in a cramped department containing a few museum specimens and no real equipment.

In the Department of Pathology the equipment and the accommodation are less inadequate, owing to the fact that this department was founded when Professor J. B. Cleland was appointed to the chair. His difficulties are therefore different from those of his colleagues who have taken over departments established in 1884. Professor Brailsford Robertson has already added some valuable apparatus to the equipment of his department and has exercised much ingenuity in adapting the material in his possession to the space available and to the needs of his classes. There is still much apparatus missing that he should possess. In the histology room, he has introduced a clever scheme for enabling a relatively large number of students to find space and light for microscopical work. This has been achieved by placing in each window a large, wedge-shaped table, so that the students can be placed close together without interfering with the light passing to the microscopes.

Now is the time to remedy these serious defects.

THE INTERNATIONAL CONFERENCE OF THE RED CROSS.

In the December issue of the *Bulletin of the League of the Red Cross Societies* the Director-General publishes an historical sketch of the development of the League and of the *Comité International de la Croix-Rouge*. The tenth international conference of the Red Cross will be held in Geneva at the end of this

month and at this conference the question will be discussed as to how far the peace-time activities of the *Comité International* will overlap or interfere with those of the League. The story of these two organizations is one of intense interest to the medical profession.

Many years ago Henri Dunant, a citizen of Geneva, was brought face to face with the ghastly results of war. He witnessed the sufferings of the wounded of the French and Austrian armies after the battle of Solferino in 1859. There were then no elaborate measures in existence for the care and alleviation of the sufferings of the wounded. Revolted against this state of affairs, he conceived an organization whose functions should be limited to the care of the wounded. He realized that unless the individuals engaged in this work of mercy were themselves protected by a recognition of their neutrality, the remedy would fail to a large extent. At first no one heeded his appeals. He then published a book entitled "*Un Souvenir de Solferino*," setting forth his demand for the immediate establishment of voluntary corps with official recognition. The book appeared in 1862. The result was the appointment of a committee of five influential men—General Dufour (Commander-in-Chief of the Swiss Army), Gustav Moynier (President of the *Société d'Utilité Publique*), Dr. L. Appia, Dr. T. Manoir and H. Dunant. This committee, we are informed, was self-appointed and unofficial. Nevertheless, it dared to issue invitations to the governments of all the countries of Europe to send delegates to a conference to discuss the proposals. The invitations were accepted and a conference was held on October 25, 1863. Progress was made, but it required time and further elaboration before full success could be attained. Emperor Napoleon III. took up the cause and induced the Federal Government of Switzerland to convene an international conference in 1864. At this official conference the famous Convention of Geneva was adopted. Mr. David Henderson calls the Convention "the charter of the Red Cross, the covenant of mercy in war." The five members of the unofficial committee were appointed the *Comité International de la Croix-Rouge*.

This committee undertook the general direction of all matters connected with the amelioration of the conditions of warfare. All questions concerning the interpretation of the Convention have been referred to it, while in time of war the committee has acted as intermediary between the national Red Cross societies. The committee has been guided by three principles. The first is that help should be extended to those suffering from the casualties of war; the second is that every effort should be made to encourage the observance of mercy and humanity in war; the third is that the *Comité* shall maintain absolute impartiality in dealing with the nations. That the *Comité* has remained impartial has never been doubted. Its members are and have been exclusively citizens of Geneva. Geneva remains to-day "the most neutral of all the Cantons of neutral Switzerland."

The League of the Red Cross Societies was created at the end of the world war. The American Red Cross consulted with the Red Cross Societies of Great

Britain, France, Italy and Japan on the feasibility of establishing an organization which during peace time might work continuously toward the reduction of disease throughout the world. A committee was formed and a conference was called. Articles of Association were drafted and invitations to join the League were issued to the Red Cross Societies of the allied and neutral countries.

The League is at present limited to the Red Cross Societies of the allied and neutral countries. The central powers are excluded and will remain outside the organization for many years. Those who have taken an active part in its constitution and who are now busily engaged in instituting a programme for fighting disease in Poland and elsewhere, felt that the neutrality of the *Comité International de la Croix Rouge* prevented them from utilizing this excellent organization for this peace-time purpose. In the next place, it is pointed out that the *Comité* is not representative. Vacancies are filled by the remaining members. None of the national Red Cross Societies has any voice in the management of its affairs and its policy cannot be influenced by outside demands. The Red Cross societies were consequently unwilling to entrust this *Comité*, notwithstanding the very high esteem in which it is held, to guide their co-ordinated peace-time work. The *Comité* has its peace-time duties to perform and its usefulness is not limited to times of war. Moreover, it is felt that there need be no overlapping of duties or functions and no rivalry between the two organizations. The League will discuss this matter in a few weeks and will endeavour to arrive at a friendly understanding with the *Comité International* concerning the best methods of avoiding duplication of endeavour and friction. The mother of all the societies exists solely and only for the benefit of humanity and it is certain that she will regard her grown up children with pride and affection, more especially when she sees them engaged in productive work of mercy and help.

THE TEACHING OF RADIOLOGY IN THE UNIVERSITY OF MELBOURNE.

Following the example of the University of Cambridge, the University of Melbourne has initiated the teaching of radiology.

In our issue of February 26, 1921, we published a notice to the effect that a post-graduate course in X-ray work would be held shortly after Easter. A large and modern X-ray plant has been installed in the natural philosophy laboratory for demonstration purposes and research work. This will be available during the post-graduate course, which will include twelve or thirteen lectures and demonstrations by well-known specialists.

It is anticipated that Professor T. H. Laby, who, in conjunction with other investigators, carried out a considerable amount of research work on the physical side of the subject in the Cavendish laboratory at Cambridge, will deliver five lectures on physical principles and apparatus. Dr. K. Stuart Cross, University Lecturer in Radiology, will give a similar number on the application to medical diagnosis, including general technique and various special applications and procedures, with a review of recent progress. Dr. S. Stanley Argyle will deal with diseases of bone, Dr. H. M. Hewlett with gastro-intestinal examination and pathology and Dr. C. E. Dennis with radio-therapy.

It is intended to hold a post-graduate course annually. These classes should prove most useful not only to those members of the profession who are practising radiology

in conjunction with their general work or who intend to embrace it as a specialty, but to all who wish to keep abreast of the rapid advances in this important branch of study.

Anyone desirous of entering for the course this year should communicate with the Registrar of the University of Melbourne as soon as possible. The course will extend over about a fortnight, starting on April 19, 1921.

THE JOURNAL OF LARYNGOLOGY AND OTOTOLOGY.

With the issue of the January number the *Journal of Laryngology, Rhinology and Otology*, founded in 1887 by Morell Mackenzie and Norris Wolfenden, commenced the thirty-fifth year of its history. Considerable changes in the management of the Journal, which has just been purchased by an editorial committee, have been made and it will henceforth be published from Edinburgh, instead of London, and edited by Drs. A. Logan Turner and J. S. Fraser, two distinguished workers in this department of surgery. No radical changes in the scope and policy of the Journal are contemplated, but an attempt will be made to enlarge the terrain from which the contributors to its pages are drawn by inviting articles from workers in this specialty in the overseas dominions.

A feature of the new issue—now to be called the *Journal of Laryngology and Otology*—will be the critical review, a summary each month of the recent advances in one or other section of oto-laryngology written by a man specially qualified for the work. A condensed report of the proceedings of the Laryngological and Otological Sections of the Royal Society of Medicine will be included, as well as clinical records of rarer cases. An occasional editorial article of scientific or educational interest is promised and abstracts of papers from current medical literature will, as heretofore, form a valuable addition. The abstracts editor is Mr. Douglas Guthrie. The new volume is being launched under the most favourable auspices and may be expected to maintain and enhance the reputation gained in the past for the presentation of new and valuable work.

COMPLIMENTARY DINNER TO DOCTOR W. H. CRAGO.

The past and present members of the Council of the New South Wales Branch of the British Medical Association entertained Dr. W. H. Crago on the occasion of the seventieth anniversary of his birthday on March 12, 1921, at the Australian Club, Sydney. Among those who had gathered together to do honour to Dr. Crago were no less than eighteen who had been chosen by their colleagues to fill the presidential chair. The toast was proposed by the President, Dr. C. Bickerton Blackburn, O.B.E., and by Dr. George E. Rennie, the closest personal friend of Dr. Crago for many years. Dr. Rennie recalled the invaluable services which Dr. Crago had rendered to the Branch and to the medical profession. Almost immediately after his election as a member of the Branch he had acted as auditor; in 1889 he was elected the Honorary Treasurer and he had continued in this office for thirty-two years up to the present time. Dr. Crago was one of the enterprising group of progressives who advocated the acquisition by the Branch of the *Australasian Medical Gazette*, at that time owned by the late L. H. Bruck. In the year 1895 the purchase was effected and Dr. Crago was chosen as the Manager. He held this position until 1914, when the *Gazette* and the *Australian Medical Journal* made room for *The Medical Journal of Australia*. Several other members were called upon to add a tribute to the guest. One and all eulogized his altruism, his conscientiousness and his diligence in the interests of his profession. Dr. Crago delighted his hosts with an interesting reminiscent speech in reply. He told the story of the Branch from its inception in 1880. Two epochs in this history arrested his especial attention. The first was acquisition of the *Australasian Medical Gazette* and the second the building of the premises in Elizabeth Street. He was unstinting in his praise of the men who had taken the principal parts in the conception and accomplishment of both events.

Abstracts from Current Medical Literature.

DERMATOLOGY.

(101) Lupus Erythematosus.

The etiology of *lupus erythematosus* and its possible relationship to tuberculosis have not been satisfactorily determined. R. Cranston Low and Andrew Rutherford draw certain conclusions from their *ante mortem* and *post mortem* observations on a case of this disease (*Brit. Journ. Dermatol. and Syphilis*, November, 1920). The patient was a widow of 56 years who was admitted to hospital suffering from bronchitis. She complained of cough, shortness of breath and copious expectoration. Her previous history included two attacks of pleurisy twenty years before and she had been subject to rheumatism and a chronic winter cough for some years. The sputum was purulent and *Streptococcus longus* was isolated from it on culture. On her face was a typical *lupus erythematosus* affecting the nose, cheeks and both ears. She had pyorrhoea and all bad teeth were extracted. A vaccine containing Friedländer's bacillus and *Streptococcus longus* was made from her sputum and three doses at weekly intervals injected. Exhibition of the vaccine and removal of the teeth were followed by marked improvement of the lupus, all of the lesions improving and some clearing up entirely. The bronchitis was also treated successfully and the patient left hospital. Three months later she was readmitted on account of a recurrence of her breathlessness. The skin condition had also relapsed. The sputum now contained *Staphylococcus aureus*, as well as streptococci in long chains. The patient died of heart failure five weeks after admission and a *post mortem* examination was made. Atheroma of the aorta and coronary vessels was found and the usual evidences of cardiac hypertrophy and dilatation. A careful macroscopic and microscopic examination of the body failed to reveal any evidence of tuberculosis. All organs except the brain were investigated and all suspicious-looking glands examined for signs of tuberculosis. The authors conclude that the findings in this case exclude tuberculosis as the cause of *lupus erythematosus*. They also believe that the presence of *Streptococcus longus* in the mouth and bronchi and the improvement after treatment with a vaccine suggests that these areas were the foci of absorption.

(102) Scleroderma.

Samuel Ayres records three cases of diffuse scleroderma in patients whose urine contained definite quantities of arsenic (*Archiv. Dermatol. and Syphilol.*, December, 1920). The first patient had been employed for ten years in a paper box factory and his work required his handling glazed paper. The second was a storekeeper who had kept arsenate of lead under her counter for four years as a preventive measure against mice. The third had used insecticides in his

house for several years, but his vague history suggests that the scleroderma began prior to the use of these arsenical preparations. In each case the scleroderma was diffuse and associated with brown pigmentation. One case of localized scleroderma (morphoea) was studied. The patient was a woman, between 20 and 30 years of age, who was a director of school gardens and commonly handled arsenical sprays in the course of her work. Her urine also gave a positive response to the test for arsenic. In all four cases the tests were qualitative and not quantitative, but were sufficiently definite in their reactions to show that a considerable quantity of arsenic, comparatively speaking, was present. The writer offers these observations as a suggestion for further investigation and deprecates the forming of any definite conclusion as to the relationship between scleroderma and chronic arsenical poisoning. It should be remembered that traces of arsenic are commonly found in the urine of apparently normal people and, conversely, that, occasionally, patients have died of acute arsenical poisoning with no sign of the irritant poison in the urine. The similarity of many features of scleroderma to the signs of chronic poisoning by arsenic would, however, suggest a relationship between the two diseases.

(103) Diagnosis of Peptic Ulcer.

R. D. Carman points out that no reliance can be placed upon a clinical diagnosis of peptic ulcer in the absence of confirmatory radiographic signs (*California State Journ. Med.*, November, 1920). A clinical diagnosis alone is open to doubt, while a radiographic diagnosis is reasonably correct. By Röntgenological diagnosis the ulcer can not only be diagnosed, but in most cases its actual situation may be noted. This information is of extreme value in prognosis and treatment. Carman makes the significant statement that there is no typical history in cases of gastric or duodenal ulceration and he forms this opinion after a careful study of the histories of many thousands of cases. He reviews a series of 3,890 gastric examinations with the Röntgen rays made during the six months beginning in July and ending in December, 1919. Of this series negative reports were given in 3,145 cases and on 351 of the patients concerned exploratory laparotomies were performed. The diagnosis was found to be correct in over 95% of cases, 336 patients being found free of any abdominal lesion. In those cases diagnosed as gastric ulcer by the radiographers Röntgenological diagnosis was found at operation to be correct in over 98% of cases. Of the cases diagnosed as duodenal ulcer, the diagnosis was shown by operation to be correct in 96%. Malignant disease of the duodenum is extremely rare and Carman has only found it in six cases in a series of 4,500 operations on the duodenum. In his experience, 90% of gastric ulcers occur in the vertical portion of the stomach. In reference to diagnosis, deformity of the gastroduodenal contour is the most important

sign, but one has also to consider alterations in motility, tonus and peristalsis. The author issues a warning against the possibility of missing duodenal ulcers at operation, as some are mere slits in the mucosa, while even large ulcers may not show externally, owing to the fact that they extend superficially rather than deeply.

(104) Standardized Treatment of Skin Diseases with X-Rays.

Howard Fox (*New York Med. Journ.*, November 27, 1920) points out that prior to the introduction of the Coolidge tube the risk of overdosage in the treatment of skin diseases with X-rays was great, but that it is now possible to measure the dose accurately if a Coolidge tube and interrupterless transformer are used. The quantity of rays depends on four factors, *viz.*, the spark-gap (representing the voltage), the milliamperage, the time and the distance from the anode to the skin. The author uses a 15 cm. gap and two milliamperes of current for three minutes at a distance of 20 cm. He calls this a skin unit. To obtain half a unit the time is reduced to a minute and a half. The fraction of a unit thus varies with the time, the other factors remaining constant. The skin unit corresponds to one H. (Holzknecht) unit and causes epilation, but no other reaction. The author rarely uses filters, but when the lesions are deep and subcutaneous, as in true Hodgkin's disease, he filters the rays through three millimetres of aluminium. For the treatment of eczema half a unit is given weekly for from four to eight weeks and for *acne vulgaris* a quarter of a unit is given weekly for twelve weeks. *Lichen planus* and hyperidrosis respond quickly to small dosages given at intervals of two weeks. Syccosis and ringworm are treated with the usual epilatory doses and the scalp is epilated by Adamson's method.

(105) Summary of 1,000 Opaque Enema Examinations.

L. J. Carter (*Journ. Canadian Med. Assoc.*, December, 1920) after an experience of 1,000 examinations of the colon by means of opaque enemata, considers that this means of investigation is essential for a complete examination of the large bowel. A bismuth meal yields little information of the condition of the colon beyond the splenic flexure. Enemata are of value in the demonstration of bands which cause obstruction or abnormal fixation of the colon. They are also useful in the diagnosis of functional from organic contractions of the colon and in the demonstration of incompetency of the ileo-caecal valve and the patency or otherwise of the appendix. The author uses a simple enema of barium sulphate mixed with mucilage.

BIOLOGICAL CHEMISTRY.

(106) The Renal Threshold for Sugar in Diabetes.

Allen and Wishart have examined a

number of dogs after partial or complete pancreatectomy as regards their renal threshold for sugar (*Journ. Biol. Chemistry*, August, 1920). It has been shown that: (a) A brief glycosuria is attended by a lowering of the sugar threshold of the normal kidney, so that as the hyperglycemia is subsiding, sugar continues to pass into the urine with a lower level of blood sugar than that which is necessary to cause glycosuria at the outset. (b) Prolonged glycosuria or hyperglycemia is attended by an elevation of the sugar threshold, so that glycosuria may remain absent, with a blood sugar level considerably higher than that at which sugar excretion ordinarily occurs. (c) Renal abnormalities, either spontaneous disease or drugs or other agencies, may either increase or diminish the permeability. In normal and partially depancreatized non-diabetic dogs the plasma sugar averages 0.108%; in severe diabetes following almost complete removal of the pancreas it rose as high as 0.357% in the absence of glycosuria during fasting. Clinical diabetes is not infrequently associated with some degree of nephritis or arterio-sclerosis and even where these are not evident there is a possibility that the same infection or intoxication which damaged the pancreas, may have left some anatomical or functional injury in the kidney. Animal experiments offer the opportunity either of studying diabetes without these possible complications, or of producing different forms of renal injury for investigation. One condition in diabetes which may affect the kidneys, is the acidosis. This supposition is supported by the well-known albuminuria and shower of casts appearing as precursors of coma. This can, however, be easily excluded as a sole cause, by the fact that dogs and most human patients, studied in sufficiently early stages, show a considerable elevation of the sugar threshold without acidosis. The typical onset of diabetes in all but the most acute cases seems to be by a gradual rise of blood sugar, frequently traceable through months in both animals and patients, before glycosuria appears. There is generally continuous hyperglycemia in the next stage of occasional or "alimentary" glycosuria, followed, as a rule, by a period of continuous glycosuria without acidosis. In most cases, at any of these stages the sugar threshold is found to be already high. The demonstration that there is a diminished renal permeability for glucose, in the sense of a raised threshold in animals rendered diabetic by pancreatectomy, as also holds for the great majority of human diabetics, furnishes one more point of similarity between the experimental and clinical conditions. The prolonged excess of sugar in the blood may be an important factor in the elevation of the threshold, but some considerations seem to oppose it. An elevation of the threshold seems to be connected particularly with severity of the diabetes, but a teleological interpretation of this as a protective mechanism for saving sugar to the body is considered improbable.

(107) Glycosuria.

L. Hamman discusses the significance of a small amount of sugar in the urine (*Canadian Med. Assoc. Journ.*, November, 1919). Nearly all mild glycosurias are post-prandial. In the early morning after the night fast, the blood sugar is at a low level; after each meal it mounts somewhat, to fall again after two or three hours. The degree to which it mounts, depends upon the quantity of food that is taken, particularly upon the quantity of carbohydrates. The best time to test for sugar in the urine is from two to three hours after the largest meal of the day. Mild diabetes has been overlooked for many months, because the specimens examined were always passed on rising. Sugar occurs in the urine when (1) the blood sugar exceeds a certain high level, or when (2) the renal permeability for glucose is increased. In normal persons the fasting blood sugar is usually below 0.1% and even after meals rich in carbo-hydrate it seldom exceeds 0.14%. Patients who excrete sugar only when the sugar in the blood exceeds 0.17% are said to have a hyperglycemic glycosuria, whereas those who excrete sugar, although the blood sugar remains considerably below 0.17%, are said to have a renal glycosuria. There are a number of conditions besides diabetes in which a small amount of sugar in the urine is observed. Chief amongst these are disturbances of thyroid and hypophyseal function, hypertension and diseases of the brain. These conditions are all characterized by a hyperglycemic glycosuria. Not infrequently patients with Graves's disease have a little sugar in the urine. In hypothyroidism, particularly in outspoken myxedema, there is a marked increase in the sugar tolerance. The hypophysis exercises a control over carbo-hydrate metabolism similar to the influence of the thyroid. Clinically more marked grades of glycosuria occur with overactivity of the hypophysis than with hypothyroidism. The frequent association of mild diabetes with acromegaly is well known. Glycosuria occurs after trauma to the skull, after cerebral hemorrhage, after convulsions and in conditions associated with increased intracranial pressure. In all these conditions the glycosuria depends upon stimulation of the hypophysis. In acute nephritis, glycosuria occasionally occurs as a manifestation of impaired renal function, with a lowered renal threshold for glucose. In essential hypertension and in chronic nephritis with hypertension a little sugar is frequently found in the urine. It is not always easy to make a diagnosis of diabetes if but a small amount of sugar is found in the urine of a patient taking ordinary diet. Whenever doubt exists, the patients should be treated as diabetics. In this way some patient may be put to unnecessary inconvenience, but none will be harmed, whereas to neglect a slight diabetes will surely be followed by injury to the patient.

(108) Nutritive Properties of Nuts.

F. A. Cajori has investigated the

nutritive properties of certain nuts—almond, walnut, filbert, pine nut, Brazil nut, chestnut and pecan (*Journ. of Biol. Chemistry*, September, 1920). From previous work the conclusion seems justified that nuts are valuable foods and, if eaten properly and used in a diet with due regard to their concentrated make-up, are on a physiological equality with common articles of diet. Cajori has investigated the various kinds of nuts to determine whether their proteins contained all the amino-acids necessary for growth in suitable proportions and whether they contained a sufficiency of water-soluble vitamins. The animals used for the experiments were albino rats. He concludes that the almond, walnut, filbert and pine nut are sources of protein adequate for nutrition, satisfactory growth being obtained when these nuts furnished the whole of the protein of the diet. Normal growth was obtained when rats were fed upon otherwise adequate diets containing the almond, walnut, Brazil nut, chestnut or pecan as the sole source of water-soluble vitamins. Animals which had declined on a diet devoid of water-soluble vitamins recovered promptly when the almond, walnut, filbert, hickory, pine nut, chestnut or pecan was introduced into the diet. The proteins of the almond, walnut, pine nut or filbert furnished the necessary nitrogenous complexes for the elaboration of milk in rats.

(109) The Antiscorbutic Potency of Milk.

There appears to be positive experimental evidence that the mammary gland does not have the power to synthesize the antineuritic vitamin and that its concentration in the milk is dependent on the supply of it in the diet. E. B. Hart, H. Steenbock and G. W. Ellis have investigated the effect of diet on the antiscorbutic vitamin in the milk (*Journ. Biol. Chemistry*, July, 1920). A basal ration, known to produce scurvy, was fed to guinea-pigs and to this was added various quantities of milk from cows fed in various ways. Evidence is presented, showing that the concentration of the antiscorbutic vitamin in milk is dependent on the diet. Cows fed in the open green summer pasture gave a milk much richer in this nutritive factor than dry fed cows or cows fed on a ration of corn silage or sugar mangels. For the majority of the guinea-pigs 50 c.cm. of summer pasture milk were required for the prevention of scurvy, although as little as 15 c.cm. were sufficient in one case. At least 75 c.cm. daily per individual of dry fed milk were needed for complete protection against scurvy. The fact that the milk contained some of the antiscorbutic vitamin, shows that the dry feeds themselves are not completely devoid of this nutritive factor. Silage from corn well matured and partly dried before being put into the silo, did not greatly enhance the concentration of the antiscorbutic vitamin in the milk. The sugar mangel milk was a somewhat better source of this vitamin than the silage milk.

British Medical Association News.

SCIENTIFIC.

A meeting of the Queensland Branch was held at the Hospital for Sick Children, Brisbane, on January 31, 1921, Dr. A. Graham Butler, D.S.O., the President, in the chair.

Dr. G. P. Dixon showed a child of five years who was suffering from a stricture of the oesophagus. The stricture had been caused by the swallowing of caustic soda six months before. When admitted to hospital, the patient was constantly vomiting all food and drink and there was definite evidence of the presence of acidosis. Gastrostomy had been performed and had been at once successful. Bougies, which could not be passed prior to operation, were now easily inserted into the oesophagus and fluids were swallowed and retained without difficulty. This result proved the large spasmodic element in the condition. The stricture was being kept well dilated and the gastrostomy wound was being allowed to close. The child was increasing in weight.

Dr. Dixon also showed a child who had been suffering from ankylosis of the temporo-mandibular joint. The ankylosis had come on gradually, without apparent cause. It was unilateral. Murphy's tests for the detection of ankylosis had been successfully applied. An operation had been performed. The bones had been cut away at their point of union and a false joint made by the insertion of fascia between the divided ends. The child had obtained good movement of the jaw.

Dr. E. O. Marks demonstrated a case of lead encephalitis in a girl of six years. She had been an inmate of the hospital six weeks previously, suffering from diphtheria, had been discharged and had later been brought to the out-patients' department suffering from tachycardia, dyspnoea and strabismus. It was at first believed that her symptoms were post-diphtheritic manifestations, but on re-admission to the wards she was found to have that intense papilloedema so characteristic of lead encephalopathy and strongly marked basophilic. The papilloedema had subsided, but there remained considerable atrophy and the vision was impaired. The outlook was bad. She was being treated with magnesium sulphate and potassium iodide internally and by means of ionization. Dr. Marks thought that the sudden appearance of a squint should call attention to the possibility of lead being the cause and the fundi should be carefully examined.

Dr. Marks's second case was that of a girl of nine years, suffering from congenital syphilis and plumbism. She also had albuminuric retinitis and a high blood pressure. The onset had been insidious and when first admitted to the hospital, six months previously, the patient had extensive eye changes. The urine was loaded with albumin and contained blood and cellular casts, but there was no oedema of the body. The Wassermann reaction had been demonstrated and, accordingly, vigorous antisyphilitic, as well as anti-plumbic, treatment had been carried out. Great improvement had occurred, the retinitis had subsided and the albumin had become greatly diminished. The child had been having a diet rich in carbo-hydrates and fats, but poor in proteins. She had greatly improved until recently, when she had developed a severe form of Vincent's angina.¹

Dr. S. F. McDonald was of opinion that the patient had interstitial nephritis, in view of the high blood pressure, the absence of oedema and the diminished power of excretion of nitrogen. Hence the patient had improved on a low protein and a high carbo-hydrate and fat diet. The prognosis was bad and death would probably occur from acute uremia.

Dr. A. Anderson drew attention to the great thickening of the blood vessels and was of opinion that this fact made the outlook much worse.

Dr. A. Jefferis Turner discussed the value of clinical signs as compared with the results of the Wassermann test.

Dr. Marks then showed a third patient, who was afflicted with acute cerebral plumbism. The onset had occurred on December 26, 1920, with meningeal symptoms—vomiting, head retraction, squint and irritability—but no fever. Lumbar puncture had been repeatedly performed and clear fluid under increased pressure withdrawn. There had been intense, double papilloedema, which had subsided rapidly after many punctures, and vision was then almost normal. The

red blood cells showed intense basophilia. There had been no reaction to the Wassermann test.

Dr. S. F. McDonald demonstrated a case of tic and stammer in a boy of nine years. These conditions had developed when the child was three and a half years old, after having received a blow on the head. When the boy endeavoured to speak he at first failed to articulate, his right hand was raised and then moved up and down and his right foot tapped on the floor. He could recite verses or sing quite well and was being trained to speak in rhythm, as had been suggested by Dr. Garnet Leary, of Melbourne.

Dr. McDonald's second case was one in which he had made the provisional diagnosis of *encephalitis lethargica*. The patient was seven years of age and was a boy who had been taken ill on January 21, 1921, with drowsiness and anorexia, followed by convulsions and vomiting. On admission to hospital, he was comatose and feverish and the left side of his body was flaccid and the right slightly rigid. At the time of the meeting the child could move his right arm and leg, but the left arm and leg were still weak, so that he could neither sit nor stand.

A similar provisional diagnosis had been made in Dr. McDonald's third case. The child was three years of age and had had convulsions in the course of an attack of whooping cough. The convulsions had been followed by drowsiness and mental irritability, but the patient had slowly improved, though he was still mentally confused and irritable. The pathological involvement appeared to be in the cerebrum rather than in the cord; the chief lesions were probably situated in the frontal region. There were no eye changes.

Dr. McDonald was undecided whether these two cases were to be diagnosed as lethargic encephalitic or as poliomyelitis of a cerebral type. They did not resemble cases of lethargic encephalitis seen in France. The most striking feature was the tendency to recovery.

Dr. A. Jefferis Turner, who had sent the last mentioned patient into the hospital, said that he had been of opinion that the child was suffering from either encephalitis or cerebral plumbism. As the child had appeared to be quite blind, he had inclined to plumbism as the cause. Ophthalmoscopic examination would help, but was impossible in such a young child.

Dr. A. Anderson spoke of a similar case in his own experience. The child had recovered, but suffered from a residual paresis of the dorsal muscles, which was now improving.

Dr. McDonald showed a fourth patient, of five years, who had been suffering from "recurring nephritis" for two years. The recurrences were acute and were associated with oliguria, serum-albumin (two to six grammes in each litre, according to Esbach's method of estimation), blood and cellular and granular casts in the urine and oedema. Between attacks the urine was apparently normal. This case was not one of large, pale kidney with oedema. Even when the albumin had almost disappeared from the urine, there was still a considerable amount of nitrogen retention and an attempt to dissipate the oedema by means of a high protein diet had led to albuminuria, headache and malaise. Fluid retention was the most important factor. The patient could probably consume a moderate amount of protein without ill effects, but the kidneys could not concentrate the urea as well as normal glands.

Dr. C. E. Tucker suggested that, as the prognosis was bad, it might be advisable to attempt decapsulation of the kidneys.

Dr. E. O. Marks said he thought that the prognosis was good, in view of the absence of eye changes.

In reply to Dr. A. Anderson, who asked if the cause of the first attack of nephritis were known, Dr. McDonald replied that tonsillitis was the possible cause.

Dr. J. J. Power showed a boy of seven years. A radiogram revealed great enlargement of the right side of the heart and some evidence of pulmonary fibrosis in the right lung. There was, in spite of this, no displacement of the apex beat. The patient had undergone an operation for empyema three years previously. The most evident physical sign was a systolic murmur audible over the whole precordium, but more intensely at the pulmonary area. Beyond slight cyanosis, the boy was comparatively free of symptoms. Dr. Power considered that the diagnosis was either interstitial pneumonia or pulmonary stenosis.

¹ This patient has since died in a uræmic condition. Before death the angina spread and became more severe. An autopsy was not allowed.

The boy was examined by many of the members and the general opinion was in favour of the diagnosis of pulmonary stenosis.

Dr. Power exhibited a second patient, a boy of seven years, who was suffering from tetanus. The incubation period was only four days. The boy had been admitted on January 1, 1921, and was having several generalized spasms each day. No definite history of local rigidity could be obtained. On January 3 the patient had thirteen spasms. Treatment had been commenced on January 2, when 20,000 units of anti-tetanic serum had been administered—3,000 units intrathecally and the remainder intramuscularly. The successive doses were 10,000 units for three days, 5,000 for two days, 3,000 for three days and, finally, 1,500 units on alternate days for five days, each dose being injected into the muscles. There was no great difficulty in swallowing. The shortness of the incubation period and the appearance of generalized signs made the outlook seem serious.

Dr. D. A. Cameron and Dr. A. Jefferis Turner congratulated Dr. Power on his success in the treatment of the case.

In reply to a question by Dr. G. P. Dixon, Dr. Power stated that the initial lesion was apparently a deep cut in one foot; but no organisms had been isolated. The diagnosis had been made on symptoms only.

Dr. D. Gifford Croll showed a child of two and a half years who had become ill suddenly on December 20, 1920, with vomiting and fever. Later the patient was noticed to have some muscular weakness of the legs. The child could not stand and only sat up with difficulty. The child could move his legs feebly when lying in bed. A diagnosis of acute anterior poliomyelitis had been made.

Dr. Croll protested against the practice of calling acute anterior poliomyelitis of a cerebral type by such names as "encephalitis" and "X-disease." He believed that all cases of this nature were poliomyelitis or polio-encephalitis and that the causal agent was the same in each.

Dr. T. H. R. Mathewson described an outbreak of encephalitis which had occurred in 1917. He showed diagrams illustrating the *post mortem* findings in this disease and stated that the microscopical appearances were identical with those seen in cases of *encephalitis lethargica* in England and quite distinct from those of acute anterior poliomyelitis. He had observed cases of food poisoning in which the clinical manifestations were identical with those of encephalitis and included convulsions, coma and spastic paresis, all of which passed off and left no trace behind.

Dr. A. Jefferis Turner spoke of a case in his recent experience in which bulbar symptoms were present. The patient's breathing was guttural and he had dysphagia. The condition resembled a case of retro-pharyngeal abscess, but examination failed to reveal any swelling. He gave a good prognosis; but the child died suddenly a few hours later and no definite lesions were found at autopsy. He believed that the epidemic then existing in Brisbane was one of poliomyelitis, with cerebral, as opposed to spinal, manifestations.

Dr. A. V. Meehan discussed the degree of recovery from muscular paralyses which occurred in poliomyelitis. He believed that some paralyses cleared up completely. He remembered two cases in which the palsies had existed for eight years, but finally disappeared.

Dr. N. G. Sutton showed a boy, aged seven, with double hip-joint disease. The boy had suffered from pain in his left hip for two years, but had not been confined to bed. There was little real shortening, but much pelvic tilting and lordosis. A skiagram revealed destruction of the upper lip of the left acetabulum and a similar, but slight, involvement on the right side. The disease was still active, as shown by the pain caused by movement of the limbs. There was very little fever. The patient was being treated by means of a double Thomas's splint and an abduction frame was being made.

Dr. A. V. Meehan considered the prognosis in this case bad. The best result which could be expected was ankylosis of the left hip-joint and entire recovery of the right.

Dr. Walter Crosse exhibited a patient suffering from stenosis of the oesophagus of two years' duration. The patient had swallowed caustic soda. The stenosis was only partial and he was able to pass bougies of increasing sizes. The patient had no difficulty in swallowing. A remarkable feature was the tendency to spasm and persistent vomiting.

Radioscopic examination showed great dilatation of the oesophagus above and complete obliteration of the passage at the level of the stricture. Oesophagoscopy was an invaluable aid in these cases.

Dr. A. T. H. Nisbet mentioned that the radiographer's difficulties in the investigation of stricture of the oesophagus were two, *viz.*, the stricture was frequently too slight to withhold the bismuth and the patient often vomited immediately the bismuth was swallowed.

Dr. Donald A. Cameron asked how frequently dilatation with bougies was being done. He suggested that daily passage was best, with increase of the interval later.

Dr. Ernest Culpin was in favour of steady and progressive dilatation.

Dr. Crosse, replying to Dr. Cameron, said he favoured a rest of three or four days between each dilatation.

The undermentioned have been nominated for election as members of the New South Wales Branch:

James Ewen Sherwood, Esq., M.B., Ch.M., 1920 (Univ. Sydney), Sydney Hospital.

Philip Michael O'Reilly, Esq., M.B., Ch.M., 1920 (Univ. Sydney), Sydney Hospital.

Nicol Ernest McLaren, Esq., M.B., Ch.M., 1920 (Univ. Sydney), Sydney Hospital.

Hugh Maxwell Armstrong, Esq., M.B., 1920 (Univ. Sydney), The Coast Hospital, Little Bay.

A. E. Allum, Esq., M.B., Ch.M., 1920 (Univ. Sydney), Sydney Hospital.

Harry Reynolds Scrivener, Esq., M.B., Ch.M., 1920 (Univ. Sydney), Sydney Hospital.

Arthur Ivan Granville McLaughlin, Esq., M.B., Ch.M., 1920 (Univ. Sydney), Sydney Hospital.

Leslie James Albert Parr, Esq., M.B., Ch.M., 1920 (Univ. Sydney), Sydney Hospital.

William Thomas Daly Maxwell, Esq., M.B., Ch.M., 1920 (Univ. Sydney), Sydney Hospital.

Jack Dudley Maude, Esq., M.B., Ch.M., 1920 (Univ. Sydney), Sydney Hospital.

Gordon Hastings Hair, Esq., M.B., Ch.M., 1919 (Univ. Sydney), Forbes.

Edwin Trenerry, Esq., M.B., Ch.M., 1920 (Univ. Sydney), of the Royal South Sydney Hospital, has been elected a member of the New South Wales Branch.

THE STATE CHILDREN IN SOUTH AUSTRALIA.

The State Children's Council of South Australia issued a short time ago its annual report for the year ended June 30, 1920. The Council, under the chairmanship of Mr. Walter Hutley, J.P., is a very energetic body and its members take a pride in the fact that the boarding-out system is reputed to be more developed in South Australia than in any other State.

During the year under review 294 children were committed to the care of the State. On June 30, 1919, there were 1,840 children under direct control. In the twelve months nine of the charge-lings died, 216 passed out of the control of the Council by effluxion of time and 66 were released on petition. There were consequently 1,843 children under control on June 30, 1920. If compared with the returns in other States, these figures appear somewhat small. Allowance, however, must be made for the non-inclusion of those children who are allowed to remain with their mothers and on whose account the mothers receive maintenance money. Of the 1,842 children, 267 were in institutions, that is approximately 15%, 27 were absconders at large, 13 were out of the State in charge of guardians and 1,536 were boarded out.

Boarded-out Children.

In another part of the report the number of boarded-out children on June 30, 1920, is given as 1,614. It is in our opinion a little confusing to include in the table of boarded-out children the absconders at large and the children in hospitals, blind, deaf and dumb institutions, etc. There were 387 children in service and 324 on probation and 83 who had been adopted. This leaves, in addition to one apprenticed child and three who were placed out without wages or subsidy, 735 actually boarded-out children. The

percentage of the total number is 39.9 as compared with 25.3 in New South Wales.

During the course of the year 642 children were returned to the institutions from which they were boarded out, etc. Of these, 103 were absconders who returned. It is not stated whether the return was voluntary or otherwise. Ninety-five children were returned from hospitals or convalescent homes, while 19 were returned for reasons such as "to be placed on probation" and "to be released." In the case of 103 children the return, presumably from service or the foster home, was effected because the child was unsuitable. In addition 84 children were returned on account of misconduct and eight on account of "mutual dissatisfaction." It thus appears that in the case of 195 children the expedient of placing the child on probation, placing the child in service or placing the child with a foster parent, failed through the fault of the child. In 38 additional cases the arrangement had to be terminated on account of the ill-health of the child. The boarding-out system broke down in 139 cases as a result of defection on the part of guardian. In 62 the guardian became unable to keep the child; in 54 it was found that the home was unsuitable; in 11 the guardian died; in six he left the district and in five he became ill. In one case there was a difference in religion. An interruption in the relations between the child and the employer or foster parent of a temporary nature occurred 43 times, when the child was returned for dental attention. It would thus appear that out of a total of 1,444 children placed in service, on subsidy or on probation the provision made for these children failed 372 times. This result does not compare unfavourably with results obtained elsewhere, but we cannot regard the frequency of failure as an irreducible minimum. Reading between the lines we are forced to the opinion that many of the failures affecting the children who were returned as unsuitable or having misconducted themselves or as having experienced dissatisfaction which was reciprocated, could have been obviated had the mentality of the children been subjected to an exhaustive examination by an expert.

The Control in Institutions.

The institutions to which State children on committal are referred, are the Industrial School, which is in effect an admission depot, two reformatories for boys, one reformatory for girls, a probationary school for boys and another for girls and a home for weak-minded children. The Industrial School is an unfortunate necessity. It is well conducted and the best use is made of the accommodation and equipment which have been evolved in the general process of expansion. The possibility of effecting a working classification of the children is limited on account of the small number of children and the large variation of types. No attempt is made, however, to introduce even a rough or preliminary classification. Its desirability is recognized by many members of the Council, but the application is rendered impossible through the absence of a medical practitioner expert in diseases of mentality and conduct. During the year under review 757 children were admitted to the institution. Among these children were 572 who had previously been in the institution and 11 who were transferred from other institutions under the control of the Council. Of the 174 children admitted for the first time only two had committed offences against the law. Four children were uncontrollable, 84 had been neglected and 27 were destitute. Among these children are many who reveal the evidence of hereditary defect, of pernicious environment and of lack of parental control. In some cases the deleterious effects of these influences are but too obvious; in others the children have suffered through one or other vulnerable point; in not a few, especially in the absence of hereditary defect, a normal physical and mental make-up suffices to protect them from damage. The trainable among these children are given an opportunity to respond to beneficial treatment. On the other hand, it is obvious that the association of normal or relatively normal children with others suffering from a mental defect or even epilepsy must diminish the amount of good aimed at by the excellent officers in charge.

Reference is made in the report to serious structural defects of the home; there is no deep drainage, which is a serious matter for an institution with over 100 inmates,

The Reformatory for Girls at Redruth plays a very important part in the tragedies of life. There is probably no more difficult task than that of the reformation of young girls of vicious tendencies. At the beginning of the year there were 33 inmates in the institution; during the twelve months this number was increased by 38 and diminished by the dismissal of 55, so that the final number on June 30, 1920, was 16. Of the 38 children admitted, only five had not before been under control. There were three transfers and 30 re-admissions. Of the 55 girls dismissed, 31 were placed in service, 4 were allowed their freedom on probation, two were boarded out on subsidy, two were allowed to take a holiday, two were sent to the Industrial School, three to the Department, one to a rescue home and four to hospital. One girl absconded, while another was released from temporary admission. In the case of four girls the dismissal followed as the inevitable result of a defective law, which removes the child from the custody of the State when she attains a certain age. It thus appears that of the 55 girls dismissed, 40 had responded to the training sufficiently to justify the experiment of discharged to service, on probation, to subsidy, on holiday and full release. The experiment would be less dangerous if the mental development of the girls were gauged on scientific principles before discharge and if those with a developmental defect probably involving the centres governing the control of moral conduct were retained in this or some other institution.

The Reformatory for Boys at Magill is necessarily larger than the Redruth institution. On June 13, 1919, there were 45 boys in the establishment. The number of admissions during the year was 71 and of dismissals 69. The list of offences on account of which 33 boys were sent to the Reformatory for the first time is very varied. Unfortunately, the mere enumeration of the form of offence gives little indication concerning the child. There were 13 convicted of larceny. It requires great discrimination to deal judiciously with a child who has stolen something. Much depends on the temptation to steal, the nature of the object stolen, the reasons for the misdeed, the uses to which the objects stolen were put, the power of the offender to realize the seriousness of the offence and so forth. That a sufficient discrimination is not exercised by the magistrates is evidenced by the fact of the relatively large proportion of boys with mental defects at this institution. The Reformatory is very well managed and the training accorded is good, if allowance be made for the fundamental defect in organization. The experiment of discharge to service was made in the case of 19 boys, on probation in the case of 16, to holiday in the case of one and to subsidy in the case of one. One child was released on petition and 16 were released at the expiration of their term.

There is another reformatory for boys at Brooklyn Park to which 20 children were admitted during the year, 11 of whom had not previously been under control. At Fullarton there is another probationary school for girls, to which nine children were added to the 14 inmates, bringing the total to 23, which was reduced to 16 by the dismissal of three and the absconding of four children. The probationary school for boys at Mount Barker is larger, the total number of admissions during the year reaching 25.

Although many of the State children are referred to "Minda," the institute for mental defectives, no account of this institution is given in the report, as this institution is under the control of the Mental Defectives Board. In an ideal State Children's Department there would be a very intimate association between all persons responsible for the care and control of persons suffering from a mental defect.

We regret that no information was given in the report concerning the admirable industrial school managed by the Salvation Army. We understand that children are frequently referred by the State Children's Council to this institution. The training, the parental care and the environment are alike excellent.

Children Placed on Probation.

Under the rubric "Custody and Control" there is a section of the children who for various reasons are subjected to the supervision of the Council, but who are not sent to an institution. The majority of these children are placed with guardians on probation. During the year 53 children were dealt with in this way. The causes for admission

were unfit guardianship in 20 cases, larceny in 12, unlawful possession in 10, being uncontrollable in 8, wilful damage in two and being neglected and illegitimate in one. It is apparent that this method is an excellent one from the fact that in the course of the 12 months under review only five of the children had to be sent to the industrial school, while six others had to be dismissed on account of misconduct. In addition to these children there were on the first day of the year 315 children on probation and during the course of the year 140 placed on probation. A relatively large number of children was therefore dealt with in this experimental manner. Failure is admitted in respect of only 22 children. This record must be regarded as satisfactory.

Mortality Among State Children.

The total number of State children under supervision during the year was 2,211. Of these, nine died. Five were under one year of age out of a total of 40, while the remaining four were over two years of age. In the licensed homes 24 children died, while in the unlicensed homes 36 died. There were 126 infants under one year in the licensed homes and of these 18 died, i.e., 14.28%. In the unlicensed homes there were 500 infants under one year of whom 26 died, i.e., 5.2%.

Among other matters dealt with in the report, mention should be made of the State Boys' Memorial, which has been instituted by a committee with Mr. Walter Hutley as Chairman and Miss H. A. Stirling as Secretary. It is proposed to erect a recreation room at the Industrial School as the memorial. The committee have already succeeded in overcoming the greater part of the difficulties.

We learn from *The Education Circular* of Western Australia (February, 1921) that the Department of Education proposes to open in the course of a few months an institution for mentally deficient boys who cannot be taught in ordinary schools. The children will be tested by recognized methods before admission. The institution will be exclusively residential. Although no further details are available, we assume that this school will be reserved for children with intellectual defects of a sufficiently marked character to render ordinary schooling unprofitable. There is no indication that children with moral as opposed to intellectual defects will be admitted. The institution will, we are persuaded, serve a very useful purpose, notwithstanding these limitations and the fact that admission will depend on the consent of the parents.

Correspondence.

PAPILLOEDEMA.

Sir: The interesting address at Brisbane by Professor Mills and your editorial comments are stimulating. I venture to draw attention to some outstanding difficulties of the mechanical explanation of all cases of optic neuritis or papilloedema. A series of experimental investigations into the effect of pressure which varied a good deal in their results, were brought to a conclusion by the convincing work of Cushing and Bordley in April, 1909, who stated:

(1) That the occurrence of the neuro-retinal oedema is primarily dependent on the passage of cerebro-spinal fluid under tension from the subarachnoid spaces of the interpeduncular region into the vaginal sheath of the optic nerve and that cerebral decompression often allows the process to subside, owing to a resultant diminution of tension from release of the confined fluid.

(2) That the experimental work corroborates many of the more recent clinical observations in showing that a choked disc, even of considerable height, may be rapid in its formation and, provided it has not gone on to the stage of new tissue formation, may rapidly subside; and thus speaks strongly in favour of a mechanical, as opposed to a chemical or inflammatory, origin for the lesion.

Whilst I believe this explanation to be adequate for marked cases of papilloedema, I find great difficulty in

accepting the pressure theory as a universal explanation. Most ophthalmologists are apt to group together different types of optic neuritis. (1) There is the old choked disc with marked elevation and absence of marked retinal inflammation, which forms a perfectly definite type. (2) There is a type dependent on renal diseases on which the elevation of the disc is not so marked, but in which a large area of the retina is involved. (3) There is a third type met with in syphilis and in the anæmias in which the elevation of the disc is not so great, in which there are rarely hæmorrhages and which usually does well. In the first two types there are almost invariably cerebral symptoms; in the third I have never seen them.

Are these three types due to one and the same cause acting in different degrees of intensity? If so, we should expect to find transition forms. I have seen an occasional case in which the renal form was hard to distinguish from the choked disc and in which I was in doubt respecting the cause, but I have never seen the third type merge into either of the other two. The fundamental point to be born in mind from the practical point of view is that, as shown by Williams and Roberts in *The Lancet* of May 12, 1900, and by Dr. Orr and myself in the *Inter-Colonial Medical Journal* of July 20, 1902, a number of cases with cerebral symptoms spontaneously recovered. Of those who recovered, however, at least half are either blind or have their vision seriously damaged. Consequently from the standpoint of treatment it is necessary to think not only of the life of the patient, but of the future vision of the patient and a number of decompression measures have been adopted. Of course, the obvious suggestion was to open the sheath of the optic nerve and this was done, I believe, by De Wecker and Brudenell Carter. I am sorry to say that I cannot lay my hand on the references, but am making further inquiries. At all events, the operation did not become general. In my own experience repeated lumbar puncture is futile to give relief. Indeed, in some cases it requires not only trephining, but repeated trephining or the removal of a large piece of skull to give adequate relief. It is improbable that any operation on the sheath of the nerve is likely to be quite satisfactory, particularly as the operation might have to be done on both sides.

I am writing, however, mainly to repeat the suggestions made in the columns of a journal years ago, that if every oculist in Australia would place on record a concise summary of their cases of optic neuritis, we should soon be able to arrive at more positive conclusions.

Yours, etc.,

JAMES W. BARRETT.

March 7, 1921.

In 1913 the Tasmanian Legislature was misguided into passing the *Opticians Act*, the chief provision of which was the registration of spectacle makers as sight testers. A board with a high-sounding name—the Tasmanian Board of Optical Registration—was established under the Act, presumably for the purpose of safeguarding the vested interests of the registered spectacle makers. As far as we are aware, no machinery was created to enable the Board to discover the damage done by opticians in the course of their practice as sight testers. The medical profession had two representatives on the Board, namely, Dr. Hugh Armstrong and Dr. R. C. Irvine. By the death of Dr. Irvine a vacancy recently occurred, to which Dr. A. E. Panting has been appointed for a period of three years.

Proceedings of the Australian Medical Boards.

NEW SOUTH WALES.

The undermentioned have been registered, under the provisions of the *Medical Act, 1912 and 1915*, as duly qualified medical practitioners:

Ernest Alexander Joske, M.B., Bac. Surg., 1920 (Univ. Melbourne), Balranald.

Frank Garrett Scoles, M.B., Mast. Surg., 1920 (Univ. Sydney), St. Vincent's Hospital.

The undermentioned additional qualifications have been registered:

Barrack, Bruce Boyle, Mast. Surg., 1921, Univ. Sydney.
Braby, Arthur, Mast. Surg., 1920, Univ. Sydney.
Brookes, George Arthur, Mast. Surg., 1921, Univ. Sydney.
Buchanan, August Lyle, Mast. Surg., 1920, Univ. Sydney.
Burnell, Glen Howard, M.D., 1920 (Univ. Adelaide).
O'Shea, Patrick Joseph Francis, Mast. Surg., 1920, Univ. Sydney.
Young, William Rae, Mast. Surg., 1921, Univ. Sydney.
Buckingham, Susan Annie, D.P.H., 1921, Univ. Sydney.

Medical Appointments.

Dr. Harvey Sutton, O.B.E. (B.M.A.), Principal Medical Officer in the Department of Education of New South Wales, has been nominated as a member of the Board of Control of the United Dental Hospital of Sydney.

Dr. Namon L. Cass (B.M.A.) has been appointed District Medical Officer to the Meekatharra Public Hospital and Medical Officer of Health to the Meekatharra Board of Health, Western Australia.

At a meeting of the Melbourne Hospital held on March 8, 1921, Dr. W. W. S. Johnston (B.M.A.) was appointed Senior Resident Pathologist to the Melbourne Hospital.

Under the provisions of the *Workers' Compensation Act, 1915*, Dr. Alexander Lyons (B.M.A.) has been appointed Certifying Medical Practitioner at Bendigo, Victoria.

The appointment as Public Vaccinators of Dr. C. Dinwoodie (B.M.A.) at Moe, of Dr. P. J. Campbell (B.M.A.) at Natimuk and of Dr. W. R. Trembath (B.M.A.) at Rosedale, Victoria, is announced in the *Victoria Government Gazette*.

It is announced in the *Victoria Government Gazette*, No. 34, of March 9, 1921, that the Commission of Public Health has determined that public vaccination may be performed at specified times in nine additional premises. These are the surgeries of Dr. C. E. Watson ("Tullochard," Bunyip), of Dr. J. H. Bennett (Hepburn Street, Auburn), of Dr. H. Wickens (Rainbow), of Dr. A. D. Cust (Henty Street, Casterton) and of Dr. H. T. Bourne (Main Road, Belgrave). These gentlemen are all members of the British Medical Association.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xxvii.
University of Melbourne: Stewart Lecturer in Medicine.
Isisford District Hospital, Queensland: Medical Officer.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phoenix Mutual Provident Society.

Branch.	APPOINTMENTS.
VICTORIA. (Hon. Sec., Medical Society Hall, East Melbourne.)	All Institutes or Medical Dispensaries. Manchester Unity Independent Order of Oddfellows. Ancient Order of Foresters. Hibernian Australian Catholic Benefit Society. Grand United Order of Free Gardeners. Sons of Temperance. Order of St. Andrew. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Australian Natives' Association. Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.)	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIA. (Hon. Sec., 6 Bank of New South Wales Chambers, St. George's Terrace, Perth.)	All Contract Practice Appointments in Western Australia.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

Mar. 22.—N.S.W. Branch, B.M.A., Council.
Mar. 25.—Q. Branch, B.M.A., Council.
Mar. 30.—Vic. Branch, B.M.A., Council.
Mar. 31.—S. Aust. Branch, B.M.A..
Apr. 1.—Q. Branch, B.M.A..
Apr. 6.—Vic. Branch, B.M.A..
Apr. 8.—N.S.W. Branch, B.M.A., Clinical.
Apr. 8.—Q. Branch, B.M.A., Council.
Apr. 8.—S. Aust. Branch, B.M.A., Council.
Apr. 12.—Tas. Branch, B.M.A..
Apr. 12.—N.S.W. Branch, B.M.A., Ethics Committee.
Apr. 14.—Vic. Branch, B.M.A., Council.
Apr. 15.—North-Eastern Med. Assoc. (N.S.W.), Annual.
Apr. 19.—N.S.W. Branch, B.M.A., Executive and Finance Committee.

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated.

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